West African Food in the Middle Ages

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ACCORDING TO ARABIC SOURCES

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FOREWORD

No one can gainsay the importance of Arabic sources for the history of West Africa. While the Negro peoples of other parts of the continent were often cut off from effective contacts with the outside world until they became caught up in the great movement of European expansion which began in the fifteenth century, those of West Africa — or at least of its northern fringes — were able throughout history to maintain contact through the pastoral peoples of the Sahara with the civilizations of the Mediterranean. Following the Arab conquest of North Africa in the seventh century, the trans-Saharan links with West Africa became a subject of interest alike to the traders and the geographers of the world civilization of Islam.

The earliest surviving Arabic reference to the West African Bilād as-Sūdān, "the land of the black man", south of the Sahara, dates, it would seem, from the eighth century. From the ninth and tenth centuries onwards, there is a considerable corpus of Arabic geographies, histories and travellers' accounts containing information about the Bilād as-Sūdān. This information has its limitations. The Arab world's knowledge of West Africa was effectively limited to the savanna lands of the Sudan that were accessible from the Sahara, and hardly extends at all to the southerly, forested region commonly known as Guinea. Much of this knowledge was not first hand. We cannot be certain that, prior to Ibn Baṭṭūṭa (1352-3), any North African or Near Eastern writer ever himself visited the lands south of the Sahara described by him. Moreover Arab scholars were inclined to incorporate uncritically into their own writings, and sometimes without acknowledgement, what they had read in earlier works. Then, as Muslims, they were apt to be contemptuous of pagan societies, and sometimes indeed said little about such in the Sudan except to comment unfavourably on what struck them as their more outrageous customs. Finally, after about the fourteenth century, there was a general decline in the spirit of scientific enquiry in the Muslim world. References to West Africa in the mainstream of Arabic writing became less frequent and less original, though to some extent this is offset by the fact that some West Africans were now

literate in Arabic and were themselves producing chronicles and other literature, some of which has survived.

Despite these imperfections, the fact remains that Arabic writings constitute virtually the only written source for the history of West Africa from the eighth century to the fifteenth, when European mariners began to bring back accounts of the coasts they had started to explore. Furthermore, since Europeans hardly penetrated inland before the nineteenth century, and did not effectively establish themselves in the western Sudan much before the present century, Arabic documents continue to be a prime source of information for the history of the interior generally and for the Sudan in particular for a further 500 years.

Nevertheless, despite the great strides which have been made during the last twenty years in the reconstruction of West African history, these Arabic sources have been relatively neglected compared with the sources available in European languages or, for that matter, the evidence of archaeology or oral tradition. There are perhaps two main reasons for this.

The first is that in the nineteenth and twentieth centuries West Africa came to be dominated by western Europeans, and the modern historians who have explored its history, black as well as white, have almost invariably been brought up in European traditions of scholarship, especially in French and in English. It is true that within these traditions there is a place for the study of Arabic and of the Islamic world, but this study is both specialized and localized. It is the work, virtually, of a lifetime to acquire a mastery of Arabic sufficient to be able to read and to interpret medieval Arabic manuscripts with any assurance. Relatively few scholars acquire such mastery, and those that do have tended to concentrate their attention on the major centres of Muslim culture in the Near and Middle East. For obvious historical reasons, French-based scholars have also concerned themselves with the western Muslim lands in North Africa, but, hardly more than their anglophone colleagues, have they extended their interests south across the Sahara to the peripheries of the Islamic world in West Africa.

It is thus fair to say that to date few Arabic scholars of the first rank have become sufficiently interested

in the history of West Africa and its peoples to have acquired a competence in its study to match their competence in Arabic or in Muslim history. Conversely — though the situation is now changing with the growth of universities in West Africa which have departments of history and of Arabic — very few of those who have first-hand knowledge of West Africa and its history have acquired sufficient mastery of Arabic to be able to make much use of the Arabic sources for this history. For the most part they have had to rely on whatever may be available in translation, usually in French or English. These translations are haphazard, and were often made by men with little interest in or knowledge of West Africa, and made before much significant understanding of its history had been achieved.

Secondly, historians of West Africa who do have Arabic, together with those who are confined to the use of translations, have for the most part looked at the Arabic sources from a very limited standpoint, as evidence for the obvious themes of the expansion of Islam into West Africa and of its interaction with the major political dominions erected by western Sudanese peoples from the time of ancient Ghana onwards to that of al-Ḥājj ʿUmar and Samori. Little thought has yet been given, for example, to the use of Arabic documentation to throw light on the economic and social history of the West African peoples.

It is against this background that an especially warm welcome must be given to this book by Professor Tadeusz Lewicki, with assistance in the preparation of its English edition from Marion Johnson. Professor Lewicki is a Polish Arabist of international fame whose work on North African history, and in particular on its Ibāḍite communities, led him to make a close study of trans-Saharan relations during the early Muslim period,* and so has brought him to a meticulous evaluation of the early Arabic sources for the western Sudan in relation to the modern studies which have been made of its history, archaeology, geography and ethnography. In the present work he has chosen to use this precious combination of talents and experience to explore an important aspect of the social and economic history of West Africa in the period before the opening of its maritime contacts with the outside world. It is a commonplace that a high proportion of the foodcrops of modern West Africa are introduc-

tions from tropical Asia and America, and there has been considerable speculation as to how its peoples managed to subsist in earlier times. Professor Lewicki shows that considerable light can be thrown on this problem by an intelligent exploration of the Arabic sources. This then is a pioneer work, and one which it is to be hoped will stimulate many further explorations in the economic and social fields of the Arabic sources for West African history.

NOTE

*See, for example, the following works by Professor Lewicki: "Une chroniques ibāḍite 'Kitab as-Siyar'", Revue des Etudes Islamiques, I (1934); "Quelques textes inedits en vieux berbere provenant d'une chronique ibāḍite anonyme", ibid., III (1934); "Melanges berberes-ibāḍites", ibid., III, (1936); "Notice sur la chronique ibāḍite d'ad-DargīnĪ", Rocznik Orientalistyczny, 11 Etudes ibāḍites nord-africaines (Warsaw, 1955); "La repartition geographique des groupements ibāḍites dans l'Afrique du Nord au Moyen Age", Roc. Or., 21 (1957); "A propos d'une liste de tribus berberes d'Ibn Ḥawḳāl", Folio Orientalia, I (1959); Les Ibāḍites en Tunisie au moyen age, Accademia Polacca di Scienze e Lettere (Rome), Conferenze Fasc. 6 (1959); "Quelques extraits inedits relatifs aux voyages des commerçants et des missionaires ibāḍites", Fol. Or., II (1960); "Les historiens, biographes et traditionnalistes ibāḍites", Fol. Or., III (1961); "L'etat nord-africain de Tāhert et ses relations avec le Soudan occidental", Cahiers d'Etudes Africaines, VIII (1962); "Traits d'histoire du commerce transsaharien", Etnograia Polska, VIII (1964); "The Ibāḍites in Arabia and Africa", Journal of World History, XIII, 1 (1971).

ACKNOWLEDGEMENTS

I would like to express my profound gratitude to Professor J. D. Fage, whose initiative and help have made the publication of this book possible. This is an English version of a work first published in Polish in 1963. Since then I have become better acquainted with West Africa; my further reading and my modest travels in Senegal and Mauritania in the years 1967 and 1968 have added much new material. For this I am greatly indebted to Professor Vincent Monteil, then Director of the Institut Fondamental d'Afrique Noire of Dakar, a generous grant from which made my travels in West Africa possible.

Among those to whom I am particularly grateful are my Senegambian and Mauritanian informants: Professor Amar Samb, the present Director of IFAN, Professor Sekene Mody Cissoko of the University of Dakar, M. Abdoulaye Bathily, formerly of IFAN, and the venerable Shaykh Mukhtārun Oild Ḥāmidun of Nouakchott.

I am also greatly indebted to Mrs Marion Johnson for her assistance in the preparation of the present English edition of my book and for her help in correcting this, and also to Mme Marianne Abrahamowicz, who made the draft translation from the Polish text.

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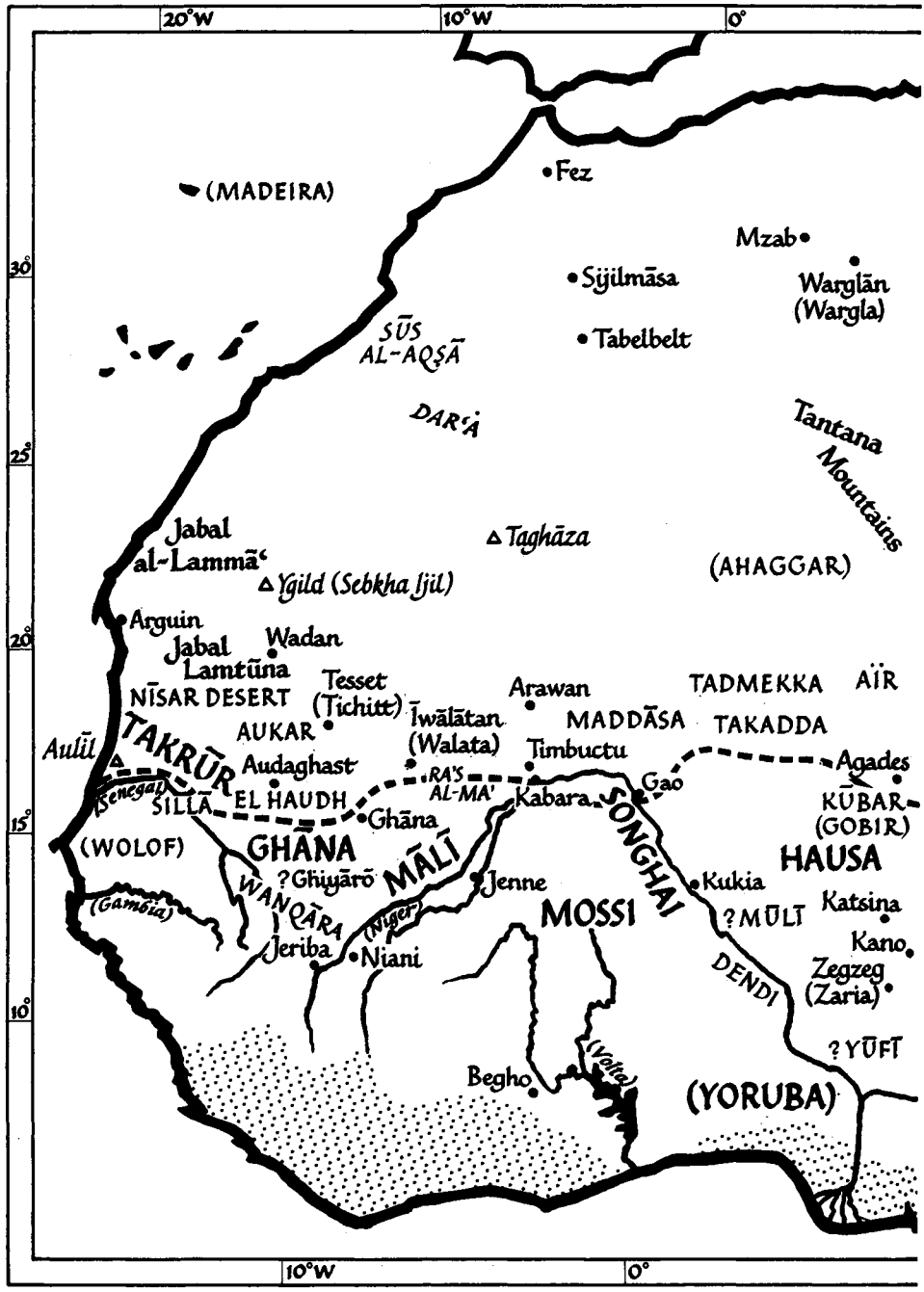
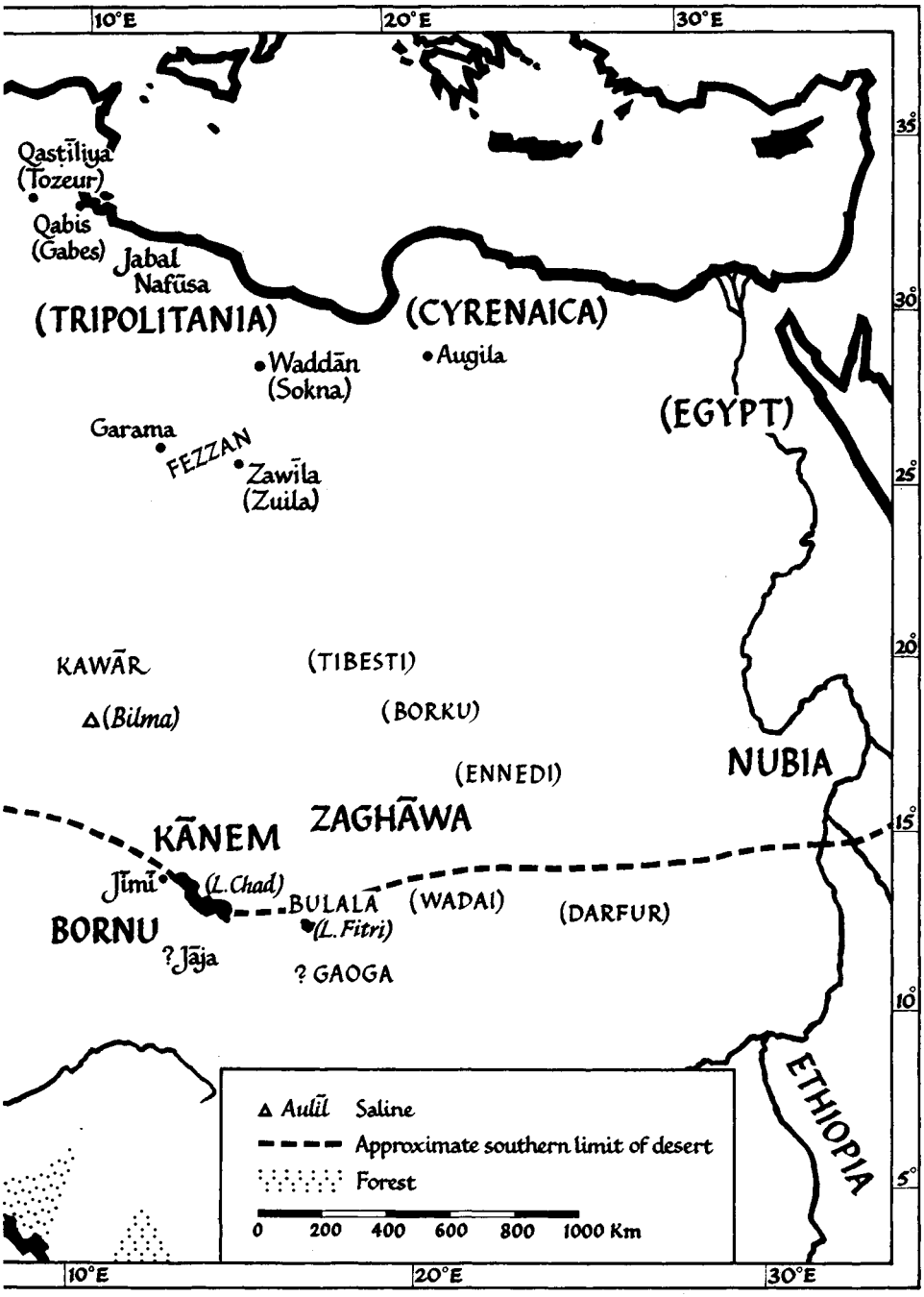
Cracow, Poland



Map of West and North Africa in the Middle Ages:
modern names appear in parentheses.


10°E
20°E
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15°
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Qastīliya
(Tozeur)
Qabis
(Gabes)
Jabal
Nafūsa
(TRIPOLITANIA)
(CYRENAICA)
Waddān
(Sokna)
Augila
(EGYPT)
Garama
FEZZAN
Zawīla
(Zuila)
KAWĀR
(TIBESTI)
Δ(Bilma)
(BORKU)
(ENNEDI)
NUBIA
ZAGHĀWA
KĀNEM
Jīmī
(L. Chad)
BULALĀ
(WADAI)
(DARFUR)
BORNU
(L. Fitri)
?Jāja
? GAOGA
ETHIOPIA
Δ Aulīl Saline
Approximate southern limit of desert
Forest
0 200 400 600 800 1000 Km

TRANSCRIPTION AND PRONUNCIATION OF ARABIC WORDS

CONSONANTS

c	a guttural sound
b	as English b
d	as English d
ḍ	a hard, emphatic (palatal) d
dh	as th in English "this"
f	as English f
gh	a guttural sound, something between gh and r
h	as in English "hay", "he"
ḥ	a strong guttural aspirate
j	as in English "John"
k	as English k
kh	a strong guttural, as ch in Scottish "loch"
l	as English l
m	as English m
n	as English n
q	as ck in English "stuck", pronounced very gutturally
r	as r in Italian "Firenze"
s	as English s
ṣ	a hard, emphatic s
sh	as English sh
t	as English t
ṭ	a hard, emphatic (palatal) t
th	as th in English "throne"
w	as w in English "wand", "wax"
y	as y in English "yard"
z	as English z
ẓ	a hard, emphatic z

VOWELS		DIPHTHONGS	
a	as a in Italian "donna"	au	as ou in English "out"
i	as i in Italian "tutti"	ay	as i in English "idea"
u	as u in Italian "frutti"		
ā	long a		
ī	long i		
ū	long u		

INTRODUCTION

The period covered by this book is often referred to by historians of sub-Saharan Africa as "the Middle Ages", though this expression is not always relevant to African history. This is the period between the conquest of Egypt and North Africa by the Muslim Arabs and the great geographical discoveries of the fifteenth and sixteenth centuries. Research on the history of Africa south of the Sahara during this period has so far been confined mainly to archaeology, historical geography and political history; many other subjects, and particularly economic history, have been neglected, and research has gone no further than the noting of the most important facts found in archaeological and written sources. One of the chief reasons for the delay in investigating the economic history of sub-Saharan Africa in the period between the seventh and the sixteenth centuries (and this also applies to other branches of history) is the absence of a critical edition, with commentary and translation into a modern European language, of the written sources in various languages. Such a Corpus scriptorum antiquam historiam Africae subsaharaneae illustrantium, with translations in a language understandable to scholars inside and outside Africa (probably English or French), is essential for research on the history of Africa from the seventh to the sixteenth century.

Admittedly the situation is much better than it was even a few decades ago. We have now modern critical editions of a number of European sources from the fifteenth and sixteenth centuries which are very important for the history of sub-
1 Saharan Africa* and also a collection of Arabic sources, though these have not been edited so as to be of maximum value for
2 non-Arabists.* These Arabic sources are particularly important for the history of Africa before the sixteenth century; the absence of up-to-date critical editions and translations makes it necessary to call in the help of Arabists, who will clearly have to face a number of problems when working on the history

*Asterisks in the text, together with Arabic figures in the left-hand margins, indicate a note in the endnotes section (pp. 135-226).

of sub-Saharan Africa. Just as an Africanist who does not know Arabic cannot always see the real meaning of the Arabic text in a European translation, Arabists can also make mistakes if they do not fully understand the problems of African history. But this does not exempt them, particularly those who are familiar with the historical problems of North Africa, from the duty of carrying out research based on the Arabic sources for the history of Negro Africa. Even before the cooperation of various specialists is achieved in the production of a collection such as our proposed Corpus, Arabists must engage as often as possible in research into the earlier history of Africa. Arabic sources, which are almost the only written sources for the history of Africa up to the middle of the fifteenth century, have often been under-estimated by Africanists, who, though they have used them repeatedly in their own work, often fail to understand their peculiar character.

This is particularly true of West Africa, the northern part of which was repeatedly penetrated during our period by Arab travellers and merchants, and for which there is consequently much more information in Arabic sources than for other parts of sub-Saharan Africa. Some of the facts in these sources have been used by Arabists and others in studies of the earlier history of North Africa; less attention has been paid to the information in these sources about the economic history of West Africa before the sixteenth century. This has encouraged me to present an English version of an account, first published in Polish in 1963, of the foods of the peoples of West Africa between the tenth and
3 the sixteenth centuries, as revealed in Arabic sources.*

Since I am only an Arabist, not an Africanist in the strict meaning of the word, I have limited my investigation to the use of a single category of written sources, though I fully realize the drawbacks of this method. With a few exceptions I have omitted the information to be found in fifteenth- and sixteenth-century European sources. On the other hand, I have made some use of the accounts of European travellers from the second half of the eighteenth century up to the beginning of the colonial period, since these are even more helpful in understanding the Arabic sources than the works of recent ethnographers, though these have also been used in the present study.

The period covered by this book begins with the tenth century — the date of the first information by Arabic writers
4 on the food of the people of West Africa.* It ends in the early sixteenth century with the Description of Africa (completed in 1526) by Leo Africanus, the last original author of Arab origin to write about our area, though he wrote in Italian, not in Arabic; his description is based on his own observations made during two journeys to West Africa (in 1511 and 1512), and on information collected during these travels.

His book, which we have taken as the end of our period, contains the last extensive description of West Africa during the time when it was almost completely isolated from the rest of the world apart from North Africa and, to a lesser extent, from the Nile valley. The next few decades witnessed the beginning of lively economic intercourse between West Africa and the countries of South-east Asia and the newly-discovered continent of America. One result of this was the appearance in West Africa of new edible plants, mainly of American origin, but including also coconut and other plants from Asia. Since the beginning of the sixteenth century, these new foods have to a considerable extent displaced the traditional local vegetable foodstuffs, and also the social and religious customs and beliefs associated with them.

The important information to be found in the writings of the medieval Arabic authors about the foods of the peoples of West Africa during our period has hitherto been used in only
5 a fragmentary way by historians.* Indeed, apart from the work of ethno-botanists, it is only very recently that there has been any attempt to investigate the foods and methods of food preparation used by the West African peoples either in the past
6 or at the present day.*

The geographical scope of the present book is limited to West Africa. By this term, in keeping with recent usage, I mean that part of the African continent inhabited by Negro peoples which is bounded on the south and west by the Atlantic Ocean, on the north by the Sahara, and on the east by the eastern frontier of Nigeria. The boundaries of West Africa so delimited are of a somewhat conventional character. This applies particularly to the northern boundary, which is not a distinct geographical barrier; the transition from desert areas to areas

occupied by permanent settled populations is gradual, and even the desert itself is not completely uninhabited. Nor is the Sahara an ethnic boundary between the white peoples and the Negroes, since within its southern part there are still some remnants of the Negro population whom we shall call Sudanic. Negro territory once extended much further to the north, par-
7 ticularly in southern Mauritania,* in the area to the north of the middle Niger, and in the country of Aïr. On the other hand, white peoples are found both on the Senegal and on the Niger and in the country east of the Niger. These are Tuareg tribes, descendants of the former Berber nomads who came there from the north — from southern Morocco, Algeria, Tunisia and Tripolitania. Having settled in the northern Sudan, these tribes frequently intermingled with the local Negro population and sometimes played a part in the history of the countries.

It is also hard to justify our eastern boundary of West Africa solely in geographical or ethnic terms. There is, in fact, no clear-cut geographical barrier separating Nigeria and the basin of Lake Chad from the countries on the Nile, and it is hard to detect any significant ethnic boundary. The eastern limit of West Africa is thus of a purely conventional character.

The vagueness of our northern and eastern boundaries has an obvious bearing on the geographical scope of this work. To throw more light on our subject, we must use not only information relating to the countries of the lower and middle Senegal, the middle Niger and eastwards to Lake Chad, but also references to the peoples of the southern Sahara and to peoples living north and east of Lake Chad.

On the other hand, it must be borne in mind that the whole southern part of West Africa, and the tropical forest area in particular, was completely unknown to the Arabs of the Middle Ages. These countries were not normally reached by Arab merchants or travellers; that is why there is almost no mention of them in the Arabic sources earlier than the sixteenth century. It is only through works written in the western Sudan in the late sixteenth and seventeenth centuries that we can look, even superficially, into the ethnic relationships and the history of these southern areas. There is very little information about the food of the peoples of the southern parts of West Africa. In some cases, however, the population

was related to the peoples of the northern zone; this was true, for instance, for the southern part of the Mande group or Mandingoes (unknown to medieval Arabs) who are closely related in culture, and particularly in their use of foodstuffs, to the northern Mande peoples. Thus we may assume that information in the medieval Arabic sources referring to the population settled on the middle Niger is also of value for peoples living in the basin of the upper Niger. Moreover, it seems that the peoples of the southern part of West Africa, particularly those living to the north of the tropical forest, though ethnically distinct from the peoples of the northern part, had a similar culture and economy, and ate the same foods that the Sudanic peoples were recorded as eating by the medieval Arabic authors. The peoples of these more isolated parts of the West African interior often succeeded in retaining their ancient customs, including traditional foodstuffs and cookery, right up to the nineteenth century and beyond, while in the more accessible coastal regions and on the southern borders of the Sahara the food of the people had been radically altered; the reasons for this are economic — the adoption of new cultivated plants — and religious — the suppression of alcoholic drinks under pressure of the rapid spread of Islam.

West Africa is by no means uniform in climate or vegetation. In the north is the desert zone, devoid of water and almost completely without plants; there is virtually no arable land and even pastoralism is extremely difficult, so that the population is sparse and mainly nomadic. In complete contrast, the southernmost zone has very heavy rainfall, and supports the rich vegetation of the tropical forest; the land can be cultivated practically everywhere, and the population is comparatively dense. Between these two extremes lie intermediate zones. The desert gradually gives way to thorn scrub on the south, and the thorn scrub merges into grassland with occasional trees. Further south, the grass grows gradually richer and the trees taller until finally the forest is reached. The country is generally flat, the monotony interrupted by the Jos plateau to the east and the Futa Jallon plateau merging into the Nimba Mountains in the far west, in the Republic of Guinée. In this area rise the three largest rivers of West Africa: the Niger, the Senegal and the Gambia, all three serving as important

arteries of communication.

The interior of West Africa is not easily accessible. Only from the east, from the banks of the upper Nile, is penetration facilitated by the absence of any geographical barrier. Along this route, along the southern margins of the Sahara,
8 influences penetrated from Nubia;* trade from Egypt had earlier passed this way, and also along the partly desert route which connected Egypt with the area of the historic state of Ghāna, a
9 route known and used by the beginning of the tenth century A.D.* The tropical forests made penetration of the interior difficult from the south, though by the early sixteenth century it was possible to transport kola nuts, an important product of the
10 countries on the Gulf of Guinea, through the forest.* From the coasts of Mauritania and Senegal on the west, foreign influences penetrated only very occasionally before the middle of the fifteenth century. Incidents like Hanno's expedition in the fifth century B.C., undertaken to found Carthaginian trading-posts on the west coasts of Africa, or the journey of the Arab Ibn Fāṭima (? twelfth century) who came into the western Sudan by way of the inhospitable coastlands of the Atlantic Ocean, were rare and can hardly have exerted any major influence.

Foreign influences penetrated West Africa from the west at a comparatively late date, and began with the foundation in 1448 of a Portuguese post on Arguin Island off the Mauritanian coast south of Cape Blanco. This was a trading post to which local products were brought in large quantities, including gold and slaves, which were exchanged for European goods, or, more accurately, goods such as the spices, mainly from South-east Asia — saffron, cloves, pepper and ginger — for which Europeans acted as commercial middlemen. We owe this information to Valentim Fernandes, whose account of the West African coast was written in 1506-7, after the discovery of the sea route to India by Vasco da Gama in 1498. It was this discovery which probably began the economic exchange between East Africa, India and the other countries of South-east Asia on the one hand, and the Portuguese post of Arguin on the
11 other.*

On the northern borders of West Africa, which are also the southern borders of the Sahara, the situation was different. The desert was less inhospitable and more densely

peopled in the past, and during the Middle Ages — and probably also in ancient times — it was crossed by numerous paths running roughly north and south along which nomadic Berber peoples penetrated from the north, and many Sudanic groups from the south. These peoples were seeking edible wild plants, game, pasture, or land suitable for cultivation. Following them, and benefiting from their knowledge of the country, came expeditions of various kinds, even in very early times; such expeditions usually started from the North African countries with towns on the Mediterranean coast, Phoenician, Greek, Roman, Byzantine and finally Arab. Their purposes varied; some were undertaken to
12 capture Negro slaves,* or to gain control of the various salt-mines scattered in the desert; some were merchant caravans in search of the gold of the Sudan, then profitably exchanged in West Africa for Saharan salt and glass beads. The introduction into North Africa (about A.D. 300?) of the camel, that most useful of animals in the desert, made travel along these routes considerably easier. The breeding of camels, undertaken on a large scale in the southern parts of present-day Morocco, Algeria, Tunisia and Tripolitania as early as the fourth century, facilitated southward expeditions of large groups of Berbers looking for fodder for their herds, or fleeing from Roman, Byzantine or Arab rule; also, very importantly, it facilitated
13 caravan commerce with the countries south of the Sahara.*

When the first Arab conquerors reached the borderlands of the Sahara, some of the local Berbers for various reasons favoured the conquerors; some of these also knew the caravan paths which crossed the Sahara, and these Berbers became the first guides of the Arabs in their penetration towards West Africa — a penetration which was at first mainly military in
14 character, but soon became commercial.* In this way the first commercial and cultural ties were formed between the North African Muslim Arabs and the western and central Sudan; at the beginning of the period of Arab rule in the Maghrib, the most important part was played not by the new conquerors, but by the gradually Islamizing and Arabizing Berbers. The truth of this is confirmed by the part played in the early Middle Ages by Sijilmāsa in south-eastern Morocco, Tāhert and Wargla in the Algerian Sahara, the oases of southern Tunisia and Jabal Nafūsa in northern Tripolitania, all Muslim, but essentially Berber,

15 centres.*

The information concerning countries and peoples of the western Sudan which began to reach centres of Arabic scholarship from the seventh and eighth centuries thus comes only in part from Arab warriors or merchants; most of this information was given to the Arab geographers by Berbers who had long been in close touch with Negroland, and who knew what was going on there. This is what makes the information so valuable. It is only at a later date, from the second half of the tenth century, that genuinely Arab travellers and geographers appear on the scene; it is their descriptions of the Sudan which provide the principal sources for the questions dealt with in this work.

The ethnic and political situation in West Africa, as seen by Arab travellers, geographers and historians between the late eighth century and the early sixteenth century has often been studied and examined. In this limited space, I will not deal with this in detail, but will concentrate on the most essential points.

In the extreme west of the Sudan, long before the first Arabic references to this country, lived the Sudanic peoples known as Tukolor (Tucuroès according to the early Portuguese travellers), Serer and Wolof. In about A.D. 1000 the first of these, known to medieval writers as Takrūr (Tekrūr), founded a state on both sides of the lower and middle Senegal, with a capital also known as Takrūr in the neighbourhood of the modern town of Podor. This state was converted to Islam at an early date; and by the first half of the eleventh century A.D., Islam had also become the ruling religion in the state of Sillā (subordinate to Takrūr), with a capital of the same name, on the middle Senegal between Takrūr and the town of Ghāna.* A rather earlier organized state in this area was the kingdom of Warām, attested at the end of the eighth century by the geographer al-Fazārī. Some investigators place this in the part of Senegal which was later to be taken over by the Wolof state.

The country east of the upper Senegal to the upper Niger and the adjacent lake district to the west was a region occupied from the earliest times by the Mandingoes. In about the third or fourth century A.D. the northern peoples of that group, including the Soninke, founded the kingdom of Ghāna, the

earliest of the known states of the western Sudan. The earliest political centre of this kingdom lay in the land of Aukar, north-west of the oasis of Walata, colonized by the Soninke even before 200 B.C. In historical times, the capital of the state of Ghāna was the town of Ghāna, now the ruins known as Koumbi Saleh in Mauritania. In the eleventh century the capital included a large Muslim quarter inhabited by North African merchants, with
17 twelve mosques, though the local population was still pagan.* Al-Fazārī gives the dimensions of the kingdom, which at that time was undoubtedly the largest political unit in West Africa. The whole of the western Sudan was subordinated to it, including the gold-bearing areas in the basin of the upper Senegal known as Bilād at-Tibr, "the land of gold-dust", a country which later Arab geographers were to call Wanqāra or Wangāra, and which was
18 also inhabited by Mandingo peoples.* According to a later legend, the first rulers of the state of Ghāna were immigrants from the north arriving in the fourth century A.D., of Berber or perhaps Jewish origin; in about 770 they were replaced by rulers from the Soninke.

The kingdom of Ghāna, whose inhabitants were partly Muslim as early as the eleventh century, had begun to decline from about 1076, after being attacked by Berber tribes from neighbouring Mauritania. These same tribes were later to lay the foundations of the great state of the Almoravids, which also took in Morocco and Spain. The gradual decline of the kingdom of Ghāna continued until the early thirteenth century, when the paramountcy of the western Sudan was taken over by the rulers of
19 another people of the Mande groupe, the Malinke (Malinké).* These people founded a great state, the centre of which near the town of Jeriba was already known in the ninth century as Mallel (Mallil). This is stated by the Arab geographer al-Yaᶜqūbī (late
20 ninth century)* and also by al-Bakrī (1068), who tells us that the king of Mallel had been converted to the Muslim faith some
21,22 time before he wrote.* The later Arabic name was Mālī.* The capital of this state was first at Jeriba on the Niger, and later at the town of Niani (Nyani, Nyeni), some distance lower
23 down the Niger, and known also as Mālī.* According to the Arab geographers, the town developed into an important centre of trade with North Africa, and, as in the town of Ghāna, a large quarter grew up inhabited by white Berber and Arab merchants,

immigrants from North Africa.* There is no doubt that the towns of Ghāna, Mālī and other urban centres of the western Sudan with North African immigrants among their populations played an important part in spreading the cultivation of some edible plants which were characteristic of North Africa rather than of the Sudan.

The state of Mālī went into decline in the fifteenth century. Most of the provinces which had belonged to it when it was flourishing in the fourteenth century went over to the neighbouring state of the Songhai, and the power of the kings of Mālī was limited to the region of Jeriba, which had been the cradle of the state.*

The state of Ghāna included the small state of Sāma or Samaqanda, reported first by al-Yaʿqūbī and then by al-Bakrī, who places it four days' journey from Ghāna in the direction of the town of Ghayārō (Gadiaro) on the upper Senegal. In the same country, two days from Samaqanda, was the town of Ṭāqa.

North of the states of Takrūr and Ghāna (and, later, Mālī) lay areas inhabited by various Berber peoples. Some of these formed the federation reported as early as the eighth century by al-Fazārī, and later by al-Yaʿqūbī, under the name of Anbiya; the whole of the western Sahara was under its rule. In all probability, these peoples were the Ṣanhāja (Zanaga) — the Lamtūna (Lemtūna), Juddāla (Joddāla, Jedāla, Guedāla) and other Berber tribes which were later to play an extremely important part in the creation of the Almoravid state. Even at this early date, an important political and commercial centre of this region seems to have been the town of Audaghast or Awdaghast, on the Rkis plateau in southern Mauritania north-east of Kiffa. It is mentioned as a kingdom (called Ghasṭ) by al-Yaʿqūbī, who adds that it was inhabited by a heathen tribe at war with the numerous kingdoms of Negroland. Further east to the north of the Niger bend, another tribe of the Ṣanhāja group, the Berber Maddāsa people, were living in the eleventh century; this same tribe in the ninth century had been living in south-eastern Morocco.

East of the area occupied by the state of Ghāna, and later by the state of Mālī, the agricultural and fishing people of the Songhai lived in the Dendi area. According to historians of Africa who have drawn on rather late sources and on local

legend, in about the middle of the seventh century these people founded a state with its capital at Kukiya on the island of Bentia, over a hundred kilometres downstream of the present-day town of Gao, the Kaukau or Jaujau of the Arab geographers which was the later capital of the kingdom. This state also had been converted to the Muslim faith, at least formally, at a relatively early date (by the eleventh century) and had entered into commercial relations with Ghāna as well as with the important commercial
26 centres of southern Tunisia and Egypt.* An intermediary in its relations with North Africa was the town of Tadmekka (also known as Tadmekket), north-east of Gao, the ruins of which are now known as es-Sūq. This is first heard of at the end of the ninth century; by the tenth century it was already the capital of a separate Berber state, which continued right up to the fourteenth
27 century.* During the first half of the fourteenth century, the state of the Songhai, or Gao, fell into the hands of the kings of Mālī. However, by the middle of the fifteenth century its importance began to increase steadily and under King Askia Muhammed (1493-1528) it was able to bring under its rule the adjacent areas inhabited by Mandingoes, Fulani, Hausa and Tuareg. As a result of its conquests, the kingdom of Songhai included the Hausa provinces in the east, its northern borders reached Taghāza, and its western borders reached Takrūr. South of the Niger bend in the basin of the upper Volta the Mossi kingdoms were developing during the Middle Ages; later sources record them as the chief adversaries of the Songhai Empire, but there is no mention of them in the medieval Arabic sources.

In the areas east and north-east of Gao, in addition to Tadmekka there were other Berber states during the fourteenth
28 to sixteenth centuries, including Takadda* and Aïr, which was
29 known already to Al-Bakrī.* The peoples of these states, of the Lamṭa (Lemṭa) tribe among others, were ancestors of some of the present-day Tuareg tribes.

South of these small states were the Hausa, a people
30 known to al-Yaᶜqūbī in the late ninth century as the Ḥauṣin.* Gobir, one of the small states formed by the Hausa, is recorded under the name of Kūbar (pronounced Gobir) by Ibn Baṭṭūṭa who visited the western Sudan in 1352-3. The other Hausa states (Kano, Zaria, Katsina) do not appear in the sources until the Description of Africa by Leo Africanus (1526). Ibn Baṭṭūṭa also

records having heard of the state of Yūfī (mis-spelt for the inferred form Nūfī) on the lower Niger, the present-day Nupe, and also the land of Mūlī (Muri on the left bank of the Niger near the town of Niamey) which in the fourteenth century was on the borders of the lands ruled by the king of Mālī.

In the Lake Chad area, the state of Kānem was developing. It had existed as early as the ninth century encompassing areas to the north of the lake. After a time it united with Bornu, to the south-west of the lake, which in the course of time came to play an important part in the association. Kānem-Bornu gradually increased in importance; in the fourteenth century, the kings of the combined state extended their power to the Kawār chain of oases connecting Kānem with the Fezzan, and even
31 conquered the Fezzan itself.*

In the tenth century, Kānem was dependent on the state of the Zaghāwa; this state took its name from a people akin to the Teda, the Zaghāwa tribe who at this period occupied areas
32 from Kawār in the west to Nubia in the east.* The centre of the state of the Zaghāwa, which the Arab geographer al-Muhallabī describes as larger than the state of Kaukau (the Songhai state), was apparently present-day Wadai. It also seems that from the tenth to the twelfth centuries, the Zaghāwa tribe was extending its influence south-westwards towards the Niger bend. By the thirteenth century, however, according to Ibn Sa^{c}īd, the Zaghāwa
33 had already become subordinate to the king of Kānem.*

This, in very brief outline, is a summary of the ethnic and political relations of West Africa — or that part of it known to Arab geographers, travellers and historians — from the
34 late eighth century to the early sixteenth century.*

1: ARABIC SOURCES FOR THE HISTORY OF THE FOODSTUFFS USED BY WEST AFRICAN PEOPLES

Let us go on now to a brief review of the Arabic sources containing information about the food used by the peoples of West Africa, or at least of its northern part, called by the medieval Arabic writers "Bilād as-Sūdān", i.e. Negroland.

The first Arabic author who gives any information on the food of the population of the western Sudan, and particularly of the state of Ghāna, is the Arab geographer Ibn al-Faqīh al-Hamadhānī, who wrote in about A.D. 903. His written account, which is known as Kitāb al-Buldān, is to a large extent based on earlier Arabic geographical studies, such as the now-missing work called Kitāb al-Masālik wa 'l-mamālik, by the Persian-Arabic geographer Ibn Khordādhbeh (Ibn Khurradādhbeh) (first version c. 846, second c. 885). Thus it is possible that the information on the Sudan given by Ibn al-Faqīh may come, not from the early tenth century, but from the middle of the ninth. But it is also possible that Ibn al-Faqīh may have had other, oral, information on Negroland, of which he made use in his work.* 1

Of lesser importance for the question at issue are the references contained in Kitāb al-Masālik, a work by the geographer al-Iṣṭakhrī, a representative of the classical school of Arabic geographers of the tenth century. The first version of this work must be dated before 933, while the second, more comprehensive version was finished in 951. It seems that the information about Africa given by al-Iṣṭakhrī was collected early in the tenth century, or possibly in the late ninth century.* 2

Al-Iṣṭakhrī's work is continued by another geographer of the classical school: Ibn Ḥauqal, an Arab from northern Mesopotamia. In the capacity of merchant (or, possibly, also of political agent), Ibn Ḥauqal visited a number of western lands including North Africa, where he stayed for many years, and the western Sudan, which he appears to have visited in about the middle of the tenth century. The information collected during his travels is included in his work, the Kitāb al-Masālik wa 'l-mamalik or Kitāb Ṣūrat al-arḍ, most of which is based on al-Iṣṭakhrī's work. There are two or possibly three versions of

Ibn Ḥauqal's work, the oldest dating from 967, the latest from
3 977.*

Of great importance for the question of the foods of the West African peoples is the now-missing work by al-Muhallabī bearing the title (in common with most of the older Arabic geographical treatises) Kitāb al-Masālik wa ʾl-mamālik. This work is better known as Kitab al-ʿAzīzī, from the name of al-ʿAzīz, ruler of the Fāṭimid dynasty in Egypt (who reigned between 975 and 996), for whom it was written by al-Muhallabī. Many parts of this missing work have been preserved because it served as the main source for entries on the geography of the Sudan in the geographical dictionary compiled by Yāqūt (early thirteenth century) who quotes it over sixty times. Extracts from Kitāb al-ʿAzīzī were also used in the first half of the fourteenth century by Abu ʾl-Fidā ; unfortunately these include few ref-
4 erences to the Sudan.*

A still more important source for the question we are concerned with is the geographical treatise by al-Bakrī, an Arab author who wrote in Muslim Spain. The work, called again Kitāb al-Masālik wa ʾl-mamālik, finished in 1068, has not been preserved intact. Nevertheless the extant manuscripts contain a description of the Sudanic lands, though not one founded on the writer's personal observation. Al-Bakrī never travelled to the Sudan, but he makes use of a number of official reports on the area, and of accounts kept in the Spanish archives. These reports date from various periods, the latest from about 1058. It seems that some of the material relating to the Sudan and western Africa was taken by al-Bakrī from another missing geographical account of the Maghrib, by Muḥammad ibn Yūsuf
5 ibn al-Warrāq (died A.D. 973-4).*

Some information on the food of the inhabitants of West Africa is to be found also in Kitāb al-Jaghrāfiyā by an Arabic geographer of unknown origin, az-Zuhrī, who in about A.D. 1137 lived in Granada, in Muslim Spain. The last date mentioned in this work is the year 545 A.H., i.e. A.D. 1150-1;
6 in all probability the work was completed shortly after this.*
Kitāb al-Jaghrāfiyā was until recently available only in man-
7 uscript,* apart from a few extracts, mainly about Africa and
8 Spain, published by Youssouf Kamal (1934) and Basset.*

Some information on the food used by the early

inhabitants of West Africa comes from al-Idrīsī, the author of the very famous geographical work, the Kitāb Nuzhat al-mushtāq fi ʾkhtirāq al-āfāq (1154). It is also known as Kitāb Rujjār (Roger's Book), after the Sicilian ruler Roger II, at whose court in Palermo, and with whose considerable support, al-Idrīsī collected materials for the work itself, and also for the atlas that accompanied it. In his description, al-Idrīsī relies mainly upon the accounts of Arab and non-Arab merchants and travellers, having recourse to the older written sources (of which he mentions a fair number) only where he can not find current information about the areas described. The passages describing the Sudan and the Sahara are, with a few exceptions, based on reports
9 from the author's own time.*

We have already mentioned the work of the Arab geographer Yāqūt (died A.D. 1229) whose field of activity covered Central Asia, Iran and Syria. His work, called Muᶜjam al-buldān, is a kind of geographical dictionary. In the entries concerning the lands and peoples of the Sudan the author relies mainly on al-Muhallabī, but he avails himself also of other older Arabic
10 written sources, including the work of Ibn al-Faqīh al Hamadhānī.*

In the second half of the thirteenth century, a geographical work called Kitāb Jaghrāfiyā fī āqālīm as-sabᶜa was written by Ibn Saᶜīd, an Arab from the neighbourhood of Granada who died either at Damascus in 1274, or at Tunis in 1286. This work is known from summaries or resumés, and particularly from the extensive excerpts included in the geographical treatise of Abu ʾl-Fidāʾ. A long account of the Sudan from Ibn Saᶜīd's geography has also been published in a French translation by Reinaud and an Arabic edition has recently been published. The principal source used by Ibn Saᶜīd for the geography of the Sudan is the now-missing account of travels by Ibn Fāṭima (twelfth century), who visited West Africa from the
11 coast of Mauritania all the way to Kānem and Bornu.*

Contemporary with Ibn Saᶜīd, in the Arab east the geographer and cosmographer al-Qazwīnī was also active. In 1275 he wrote a geographical treatise, the Athār al-bilād, in which he gives some original information on the Sudan derived from various sources including two travellers in the Sudan, al-Janahānī (?) and al-Milyānī (mis-spelt as al-Multānī), who apparently visited the country in the thirteenth century, though

12 no details are known about them.*

Some information on West Africa including references to the food of the local tribes is given by the Syrian author Shams ad-Dīn ad-Dimashqī (died A.D. 1327), in his cosmography Nukhbat ad-dakhr fi ᶜajāᵓib al-barr wa ᵓl-bahr. But his information is hardly original, bearing the strong stamp of al-Bakrī's
13 influence.* Among the sources used by ad-Dimashqī, mention should be made of a work by al-Waṭwāṭ (died A.D. 1318), in which
14 there is also some information on the Sudan.*

Of great importance for the question under discussion is the geographical treatise Taqwīm al-buldān, by the famous Arabic historian and geographer of Syrian origin, Abu ᵓl-Fidāᵓ. This work, completed in 1321, gives much valuable information about Negroland; it was based mainly on the geography of Ibn Saᶜīd, and to a much smaller extent on a now-missing work by
15 al-Muhallabī.*

Among the basic sources relating to the food used by the tribes living in West Africa is the geographical treatise Masālik al-abṣār, by al-ᶜOmarī, an Arabic author who lived and wrote in Egypt (1301-49). The author, noted for his learning and for his scientific precision, though he himself did not visit the Sudan, makes use of a number of contemporary accounts, most of them oral; these he sometimes cites in the original version, from time to time drawing attention to their mutual contradictions. Among those who told him about the land of Mālī, on which he has a great deal of information, was ad-Dukkālī, a Moroccan who had lived in the capital of Mālī for thirty-five years, and had come to know the whole country well. Some of al-ᶜOmarī's information comes from the Spanish Arab, Abū ᶜAbd Allāh Muḥammad ibn Raghano, who visited various countries including Mauritania in the early fourteenth century, or perhaps the late thirteenth century; and some of his information comes, indirectly, from Mansā Mūsā, king of the Mālī empire, who spent some time in Cairo during a pil-
16 grimage to Mecca in 1325.* As regards the description of the Sudan, al-ᶜOmarī's work served as a foundation for the work of al-Qal ashandī, an Arabic encyclopaedist who lived and wrote in Egypt. He is the author of Ṣubḥ al-aᶜshā, which he wrote in
17 1412.*

Another work of equal importance for our purpose is that of Ibn Baṭṭūṭa, a Moroccan scholar of presumably Berber

origin who included the Sudan (1352-3) in his numerous travels in Asia, Europe and Africa. His route was from Sijilmāsa in south-east Morocco past the salt deposits of Taghāzā, the oasis of Walata, the town of Mālī (Niani), Timbuctu, Gao, Takedda, Air, Hoggar (Ahaggar) and the oasis of Tuat. After returning from this roundabout journey to Sijilmāsa, he went to Fez, the Moroccan capital. Ibn Baṭṭūṭa's account of his journeys was written down in 1355 from his dictation by Ibn Juzayy, who completed the work in 1356; it is called Tuḥfat an-nuẓẓār. Ibn Baṭṭūṭa gives much interesting information on the Sudan and its inhabitants as well as on their food, a testimony to his excellent powers of
18 observation and high reliability.*

The last author whose information on the food of West African peoples has been used in this study is Leo (or rather, Johannes Leo) Africanus, the outstanding Arab geographer of the first half of the sixteenth century, who wrote in Italian. He was a Moroccan by birth, of a Spanish-Arab family from Granada, who after 1492 settled at Fez, the capital of Morocco. His Arabic name was al-Ḥasan ibn Muḥammad al-Wazzān az-Zayyātī. In his early youth he went on a journey to the Arab east and to Constantinople; in 1511, when hardly seventeen years old, he went to Timbuctu to the court of the king of the Songhai state, Askia Muhammed, accompanying his uncle, sent there by the Moroccan ruler on an important diplomatic mission. After his return to Morocco, Leo lived there for a time; then, according
19 to his own statement,* he went on another journey to the Sudan
20 in 1512, going from the western Sahara and Timbuctu,* through
21,22,23 Bornu* and Gaoga (Wadai)* to Egypt.* In 1518 he was taken prisoner near the Tunisian coast by Sicilian corsairs, and so came to Rome, where he found a protector in the person of Pope Leo X, a great lover of science. In 1520 al-Ḥasan was baptised and given the Christian name of Leo with the nickname "Africanus". Luckily Leo Africanus had with him, at the time of his capture, the records of his travels in North Africa and the Sudan; these later served as the basis for his very extensive and interesting treatise on the geography of Africa, written in Italian and called Description of Africa. According to Leo himself this was completed in 1526. The first edition appeared in 1550 and was followed within six years by translations into Latin and French. The French translation served as the basis for Schefer's edition,

published in Paris in 1896-8. In 1931 the MS of another version of the Description of Africa was discovered, more complete than the one which had served as the basis for the Italian edition of 1550 and for the Latin and French translations of 1556. An edition of the text of this more extensive version is now being prepared. There is a French translation, published by Epaulard in 1956.

Leo Africanus's work is of outstanding value, not only because of the abundant material it contains, but also because the author wrote it from records (in Arabic) which, as
24 he says himself,* he made daily, writing down his own observations as well as accounts given him by trustworthy people. His transcriptions of the Arabic names of Sudanic countries, towns and peoples, and also of Sudanic words, sometimes occasion uncertainties, but this is natural enough if we bear in mind the long period of time which had elapsed between the time the travel diary was written (1511-12) and the time when the completed work was produced (1526). This sometimes leads to diff-
25 iculties in the identification of names.*

The Arabic sources listed are of very unequal value. Alongside extensive reports describing in great detail various foods used by the inhabitants of West Africa in the Middle Ages, or informing us on the production of foodstuffs, on agriculture, cattle-rearing, hunting, fishing or gathering, there are also tantalizingly brief references. In general, all the information is fragmentary and haphazard, and it is not easy to reconstruct from it a full picture of the food used by the various ethnic groups inhabiting the Sudan. Nevertheless, we hope that, in spite of the wide divergences between the various sources in point of time, and despite the great extent and variety of the territory that is covered, they will permit us to learn the basic facts about the sources of the foods of the inhabitants of the northern parts of West Africa, and how these foods were prepared.

2: VEGETABLE FOODSTUFFS

THE MIDDLE AGES AND SUBSEQUENT CHANGES

The principal source of food for the majority of the peoples inhabiting West Africa in the Middle Ages was, as it still is, agriculture — the cultivation of plants, particularly grain, starch-containing root crops, leguminous plants and vegetables. Food collecting (mainly the grain of wild grasses, and also of the fruit of wild trees), animal husbandry (including bee-keeping), hunting and fishing were also practised to a large extent, providing, among other things, meat, milk and fish; nevertheless, the foods obtained by these means were far less significant than those obtained through cultivation. Clearly, however, this was not the case in countries where geographical or climatic conditions did not permit agriculture, or where the populations were economically backward. Here animal husbandry took the first place, followed by food collecting, fishing and hunting — types of economy which in better-developed communities played only a subsidiary part. Thus, for example, the economy of pastoral peoples (I am referring chiefly to the Tuareg and the tribes of the Teda-Daza group, living as nomads in the northern parts of West Africa and the adjoining areas of the southern Sahara) was based mainly on the keeping of camels, sheep, goats and cattle, and on the collection of the seeds and roots of wild plants, particularly grasses. Some peoples in southern Mauritania (Nemadi) lived almost exclusively by hunting, while the basic source of livelihood of other West African tribes, in the coastal areas, on the Senegal and Niger rivers or on Lake Chad was fishing. It must be pointed out, however, that even in the Sahara there were areas where, during the Middle Ages, people practised agriculture or the cultivation of date-palms, alongside animal husbandry or hunting. Moreover, the foodstuffs used by the peoples of the Sahara, even those who did not cultivate land themselves, included millet and other varieties of grain imported chiefly from the more fertile areas of West Africa and southern Morocco.

The privileged place of agriculture as the basic
1 source of food for the West African peoples* has been maintained

up to the present in spite of the various changes, sometimes profound, which took place in the economy of these areas at the turn of the twentieth century to suit the interests of the colonial powers. What has actually changed in the course of the last few centuries is the type of food-plant. These changes took place chiefly between the middle of the sixteenth century and the end of the eighteenth, and were the result of the great geographical discoveries of the late fifteenth and early sixteenth centuries. These were, first, the voyages of the Portuguese which led to the discovery of the sea route to India and the other countries of South-east Asia, which in turn facilitated contacts, through the intermediacy of Portuguese factories, between these countries and the West African coast and, second, the discovery of America. This was followed by a growing demand for labour by the Spanish and Portuguese colonists in the New World which led to a tremendous growth in the Negro slave trade, Africans, mainly West Africans, being exported to America in great numbers. This contributed to closer economic contacts between western Africa and the newly discovered continent.

The consequences were a large-scale influx into West Africa of South Asian plants, and, in still greater number, of American plants, which rapidly displaced the cultivation of many basic local edible plants. Thus, for example, in about 1520-40 there was an extension in West Africa of the cultivation of the coconut tree, which came from southern Asia and the East African coast. It was from America that West Africa obtained maize and sweet potatoes in the sixteenth century, in the seventeenth century cassava and pineapple, and in the eighteenth
2 century, guava and groundnuts.* The extent to which West African food changed, and how quickly this occurred, can be illustrated by information given by the traveller S. M. X. Golberry who visited the West African coasts between 1785 and 1787, and who described the economy of the Bambuk country between the Bafing and Faleme rivers in the basin of the upper Senegal — that is, in the West African interior — inhabited
3 by a people of the Mande group. According to his information,* the basic edible plants cultivated in that country, inhabited by a rather primitive population, even at this date included plants of American origin, namely maize, cassava and sweet

potatoes, in addition to the local millet, beans, water-melons and the "pistachio-peas" eaten roased. This last name may have meant either local Bambara groundnuts (bot. Voandzeia), or American groundnuts, now an important source of wealth in Senegal. This process of the displacement of local crops by
4 newcomers from abroad has continued up to the present.* Our task now will be to establish, from the rich though fragmentary material in the medieval Arabic sources, what was the nourishment of the West African peoples prior to the basic changes brought about during the sixteenth to eighteenth centuries.

GRAIN

As we have said, vegetable foods played the most important role in the feeding of the greater part of the population of West Africa, in the Middle Ages as at the present day. These were obtained either by collecting seeds, fruits, roots, tubers and other parts of wild plants (which in some cases for instance rice and some other grasses assumed the dimensions of an actual crop and were of great economic value), or by the cultivation of various plants rich in carbohydrates, protein and sometimes fats. This second process was of basic importance to the West African economy. Many of the cultivable plants were of West African origin — for example the local varieties of millet, fonio, yams and beans — and had been domesticated long before the time we are considering from species which grew wild in the savannas or in the border country between savanna and tropical forest.

Ibn al-Faqīh al-Hamadhānī, the earliest known Arabic author who writes about the food of the peoples of West Africa, already emphasizes the part played by cultivated plants in the food eaten by the inhabitants of the kingdom of Ghāna, which also included parts of present-day Mauritania and Mali. He wrote
5,6 that they ate beans and a kind of millet* known as dukhn.* There is further information from the late tenth century about the great importance of the same plants in the economy of another country at the eastern end of our area, in the Lake Chad region. Arab geographers in the early Middle Ages called this country, or at least part of it, Zaghāwa; this name was also applied to the tribe living in the borderland between Wadai and Darfur which still uses the name, and also to various allied peoples,

including the Bulgeda, Kreda, Teda, Daza and others. Al-Muhallabī, who wrote between 975 and 996, in a passage of his now-lost work quoted in Yāqūt's geographical dictionary (early thirteenth century), says that an important part was played by sorghum millet (Arabic dhura), beans and wheat in the economy of the
7 Zaghāwa country (perhaps also of Borkou and Kānem).*

There is also other Arabic evidence to confirm the prime importance of the cultivated edible plants in the food of the West African peoples. Al-ᶜOmarī (who wrote between 1342 and 1349), writing of the historic state of Mālī which had then reached the height of its development, states that the principal food of its people was rice, fūnī (fonio, see below), wheat (which, however, was scarce there) and, above all, sorghum millet which provided food not only for the people but also for
8 their riding horses and pack animals.* The same author writing of Kānem, which formed a joint state with Bornu in the fourteenth century, said that the principal food of its people was rice,
9 corn (wheat?) and sorghum millet.*

There are also references of a more general nature which emphasize the existence and importance of plant cultivation, and of various kinds of millet in particular, in the economy of West Africa between the early tenth century and the
10 early sixteenth century. Leo Africanus (1526)* says of the
11 countries on the Niger* that they were entirely suitable for cultivation and that corn grew there in abundance; al-Bakrī (1068), in his description of the kingdom of Ghāna in the western Sudan, says that the people there sowed twice a year, once at the time of the Niger flood, and again when the ground
12 was still wet.* In another place he speaks of the ripening of
13 ears of corn and of gleaning, again in Ghāna.*

Al-Bakrī gives indirect information on the economically important cultivation of crops in mixed farming in the country of Mallal (Mallel), a name which very probably means the later Mālī (Malli, Melli). According to him, this country suffered from drought, a disaster which lasted several years, and did not diminish, despite the fact that the still pagan population of the country brought offerings of cows and oxen in such numbers
14 as nearly to exterminate their herds.* Ibn Baṭṭūṭa records that during his stay in Mālī (1352-3), a Muslim faqīh (jurist) from a distant province of the country brought news of a locust

disaster which, he claimed, had been sent by God to destroy the
15 crops of that province.* Both these references clearly testify to the important part played by the cultivation of plants, and of grain in particular, in the state of Mālī. This is corroborated by another passage in Leo Africanus's work from which it appears that "Melli" (Mālī) — or at least the area near the capital of this country which bore the same name (now Niani near the confluence of the Sankarani river with the Niger) — had
16 grain in profusion.* Leo Africanus writes that Tombutto (Timbuctu), one of the principal commercial centres of the Songhai state (Gao), where he probably stayed in about 1512, was
17 rich in corn.* Similar information about the town of Gao, the capital of the Songhai state, is given by ad-Dimashqī, the Arab cosmographer who wrote in the first half of the fourteenth century. He reports that on the banks of the river flowing through the town of Kaukau (Gao) there grew wheat (qamḥ) and
18 various kinds of grain.* The importance of the cultivation of edible plants is also confirmed by Leo Africanus, who reports that the population of the small provincial towns and villages in the country of Gago (Gao) consisted of agriculturalists and
19 pastoralists.*

On the other hand, corn production was rare in the countries adjoining the Sahara, and in the oases in its southern regions. Al-ᶜOmarī, for example, records that the inhabitants of the Berber kingdom of Audaghast (with a capital of the same name
20 in present-day southern Mauritania) had little corn.* He says
21 the same thing of the kingdom of Tadmekka, north-east of Gao.* This is confirmed by al-Bakrī, who records that millet (Arabic dhura, sorghum) and other kinds of grain were imported to Tadmekka from Negroland (i.e. from the western Sudan proper). But he also reports that the food used by the people of Tadmekka included a certain kind of grain produced by the land without
22 cultivation.* This refers to the collecting of certain grasses, which, as the text shows, must have been of fairly high economic value. Similarly, according to al-ᶜOmarī, the people of the Aïr
23 sultanate had only a small amount of grain.*

By contrast with the Sahara borderlands, in the countries inhabited by the Hausa people grain was cultivated on a large scale. This information we owe to Leo Africanus, who emphasizes that in the province of Cano (Kano), corn grew in

abundance, and the people were either pastoralists or agriculturalists.* Corn (millet?) was similarly cultivated in the province of Gobir, where it was sown in pools left by rain water (in the dried-up river Gulbi-n-Kaba), just as it is today. The provinces of Zamfara and Zegzeg, Leo Africanus reports, also had an abundance of corn.* According to him, the people of Bornu cultivated millet as well as "some other kinds of corn unknown to us".* These could include, for example, fonio (also known as acha).

Millet

It seems that the principal kind of grain in the widest sense of the word, apart from rice, cultivated in the Sudanic (i.e. northern) zone of West Africa in the tenth to sixteenth centuries was millet. In the medieval Arabic literature, and in the early Portuguese sources, and later in the reports of travellers and scholars of the nineteenth and twentieth centuries, millet appears under various names, often hard to identify, if not altogether unidentifiable with the varieties defined by botanists. Sometimes the early authors and even present-day research workers apply the same name to two different kinds of millet, or apply two names to the same kind.* We shall now try to list, analyse and, whenever possible, to introduce some order into the rich variety of names applied to the different kinds of millet. On this basis we shall then proceed to outline approximately the areas of cultivation of the two basic kinds of millet which we know were grown in West Africa.

These two kinds of millet are: bulrush or pearl millet (French: millet africain, mil chandelle, petit mil; German: Negerhirse or Negerkorn; bot. Pennisetum typhoideum or P. spicatum, formerly Penicillaria spicata*) and sorghum or Guinea corn, great millet (French: sorgho, gros mil; German: sorghum, indische Hirse; bot.: Sorghum vulgare and Andropogon).* In the medieval Arabic sources, bulrush millet appears under the name of dukhn or anilī (enelī, enilī) and sorghum under the name dura, durra, dhura etc. But, as Mauny has pointed out, Pennisetum typhoideum may also be concealed under the name dura and its variations.*

Bulrush millet

Let us begin with the references in the medieval Arabic sources to Pennisetum typhoideum, i.e. bulrush millet.*

Ibn Saᶜīd, a thirteenth-century geographer, describing countries on the Niger inhabited by innumerable Negro peoples, reports that in addition to beans they cultivated a grain which they called anilī (etc.) which the Europeans knew under the name
32 of banj (banij), while the Arabs called it dura.* As we have already said, Arabic dura properly means Sorghum vulgare, but may sometimes also mean Pennisetum typhoideum. On the other hand, the word banj (banij) is the Arabic equivalent of the Spanish panizo (kind of millet), the word being derived in turn from the
33 Latin panicium or panicum, meaning millet.* Finally, anilī (another possible pronounciation is enelī) is a metathesis of
34 the Berber word illān, derived from the Latin milium — millet.*
35 Dozy sees in it one of the names for Pennisetum typhoideum.*
36 According to Barth,* the local name used in Walata in the western Sudan to designate "Negro corn" (Pennisetum typhoideum) was énĕli, which is the exact equivalent of the anilī recorded by Ibn Saᶜīd. In another place Barth reports that this was the name given to Pennisetum typhoideum in the Berber dialect of the
37 Tuareg tribe of the Auelimmiden (Auellimiden, Aulimmiden, etc).* Later errors may have been due to the fact that the same
38 traveller reports* a similar word, énĕli, as a name in the Auelimmiden language for the kind of millet called Guinea corn, i.e. Sorghum vulgare, by Barth himself. Another European writer, Jackson, quotes a different form of the Sudanic name for
39 Pennisetum typhoideum, namely allila,* which is simply a deformation of anilī, or can be directly referred to the Berber word illān.

The word anilī also occurs more than once in Ibn Baṭṭūṭa's account of his travels to designate a variety of "Sudan millet". For example, in the description of the salt-mine at Taghāza in the western Sahara and the adjoining miners' settlement, we find that the population was eating, among other
40 things, anilī imported from Negroland (Arabic: Bilād as-Sūdān).* A little later, Ibn Baṭṭūṭa reports that in the town of Īwālātan (Walata), at the southern edge of the Sahara, on the way to the town of Mālī, the food of the people included foods made from
41 anilī.* This foodstuff could be obtained in every Negro village on the route from Walata to Mālī, but it was imported to Walata from the village of Zaghārī, on the same route ten days' dis-
42 tance from the town.*

Another name used by medieval Arabic authors for
43 Pennisetum typhoideum (Penicillaria etc.) is dukhn.* It is first used in the description of the state of Ghāna referred to at the beginning of this chapter, in the work of the geographer Ibn al-Faqīh al-Hamadhānī, who states that the food of the people of this country consisted of beans and a kind of millet (in the
44 text — dura), known as dukhn.* Al-Muhallabī (who wrote before 996), the Arab geographer quoted by Yāqūt (early thirteenth century), also mentions dukhn, which, according to him, was the second kind of corn (after wheat) cultivated in the town of
45 Audaghast.* According to a more correct and fuller version of the quotation from al-Muhallabī's work given by Abu ʾl-Fidāʾ, people at Audaghast were sowing wheat, dukhn, durra (sorghum),
46 beans and peas.* From the fact that the text mentions both dukhn and durra, it is clear that two different kinds of millet are involved, one of which is Pennisetum typhoideum, and the other Sorghum vulgare. Al-Maqrīzī, a fifteenth-century author who lived and wrote in Egypt, also mentions dukhn, which he also calls qamḥ as-Sudan ("Sudan wheat"), noting that in appearance
47 it was like barsim, i.e. clover, Trifolium alexandrinum L.*

The identification of dukhn with Pennisetum typhoideum (Penicillaria spicata etc.) has been attested beyond any doubt by Nachtigal, who distinguishes this kind of millet from Sorghum
48 vulgare (durra).*

In addition to names like anili etc. and dukhn, used for bulrush millet both by medieval Arabic authors and by the peoples of the present-day Sudan, some other local names are also in use. In the central Sudan, this grain is sometimes
49 called qaṣab, ṣaṣab.* The Wolof call this kind of millet (or a
50,51 variety of it) sanyo (also suna);* the Hausa — gero* or maiava
52,53 (a variety of the first);* the Teda — annerâ;* and the Kanuri —
54 argum môro.*

The Portuguese called the kind of millet cultivated by the Berber Azeneghes (Zenaga in southern Mauritania) milho dos Negros ("millet of the Negroes"). The name is given by Fernandes
55,56 (1506-7);* his editors hold the view that sorghum is implied.* But should we not identify the "millet of the Negroes" with Pennisetum typhoideum, which al-Maqrīzī in the fifteenth century
57 termed "the wheat of the Negroes",* and another medieval Arabic author banj (banij) as-Sūdān, "millet of the Negroes"?*

As we see from the references cited above, Pennisetum typhoideum was cultivated in the countries on the Niger, including places on the way from Walata to the town of Mālī, at Audaghast and in the historic state of Ghāna (on the borders of the former French Sudan, Senegal and Mauritania). This kind of millet was also exported from the Sudan to Walata and Taghāza in the western Sudan, where it was in general use. The inference from the information given in Arabic sources is that Pennisetum typhoideum cultivation was restricted to the basin of the middle Niger and adjacent lands, i.e. to one part only of West Africa. But both in the nineteenth century and at the present day, this kind of millet has been cultivated much more widely. According to Barth (1849-55), it was cultivated not only in the basin of the middle Niger, in Timbuctu, Arabinda, Say and Sinder, but also in the area occupied by the Hausa at Kano, Katsina and between Say and Sokoto, and in Aïr and the neighbouring countries Tintellust, Agades and Damerghu.* The extension of the cultivation of Pennisetum typhoideum (Penicillaria) far to the east is also attested by Nachtigal, who speaks of the cultivation of dukhn at Tibesti, Kanem (Ngigmi) Bornu, Borkou, in part of Bagirmi, in Wadai and Darfur — in almost all cases together with sorghum.* For the Hausa country and for present-day Nigeria in general, we have the cultivation of Pennisetum typhoideum attested among the pagan tribes on the border between Bauchi and Kano,* among the Jerawa tribe in Bauchi,* among the Kontagora and Zuru peoples in the Ilorin province,* among the Achipowa to the north-east of the middle Niger,* and also in the Nupe province. It is also cultivated by the Wolof and the Serer in Senegal and Gambia; in the case of the Wolof, it is grown together with sorghum.*

So wide an extension of the cultivation of dukhn can hardly be a recent development of the past few centuries. The fact that there are no references in the medieval Arabic works to confirm the occurrence of this kind of millet between the estuaries of the Senegal and the Gambia and Darfur may well be the result of the fragmentary character of the source material available. But it is also possible that dukhn may sometimes be implied, as I have already suggested, by the Arabic name dura (etc.) which is much more frequently mentioned by Arabic authors dealing with West Africa.*

It has been argued by botanists that there were two separate centres of bulrush-millet cultivation, one in West Africa and the other in the Lake Chad area, each of them involv-
68 ing several varieties of this kind of millet.* It may be added, moreover, that Pennisetum typhoideum is a grain native, if not
69 to West Africa, then to the central Sudan.* According to Cobley, this kind of millet was derived from wild varieties in this very
70 region of Africa, in the savannah zone;* thus, its domestication must have taken place there. It does best on light sandy soils,
71 which are not good for sorghum.* Nowadays its cultivation extends widely throughout the tropical zone of the Old World, including India and Pakistan, where its popularity is almost equal to that of sorghum, although it is inferior to it in nutritional value,
72 and provides animal fodder of lower quality.*

Sorghum

Before we go on to discuss the references in the medieval Arabic sources to sorghum, i.e. dura (always remembering that the name may sometimes also imply bulrush millet, i.e. Pennisetum typhoideum) it seems advisable to examine some of its properties.

Sorghum, i.e. dura, a seed-producing plant, must first be distinguished from Sorghum saccharatum, a kind producing a stem with much sugar in it. Sorghum is one of the most important cultivated plants in the world. It supplies the basic food for a considerable portion of the population of Africa, India and the drier parts of the tropics in other parts of the world. According to earlier theories (Schweinfurth, 1891) the origins of sorghum cultivation (dura cultivation) in Egypt went back only to the Romano-Byzantine period. In fact, the oldest seeds found in Egypt come from the Coptic period (sixth to seventh centuries A.D.). De Candolle (1883) supposed that Sorghum vulgare came from the tropical areas of Africa, but he had no convincing proof to support this. N. I. Vavilov (1935) thought that the cultivation of Sorghum saccharatum originated in Abyssinia, whereas Sorghum vulgare came from Hindustan. But in the following year, J. D. Snowden was able to prove that Sorghum vulgare came from Africa and that it had for its predecessor Sorghum arundinaceum, a wild grass widely disseminated in the tropical part of West Africa. Today it is assumed that there were three different foci where Sorghum vulgare was domesticated: 1) West Africa; 2) Nile-Abyssinia, and 3) East Africa. It is further

suggested that Africa must have produced different varieties of grainy sorghum before they were formed in India. This hypothesis is put forward by Portères in a paper read at a conference in
73 London in 1961.*

Stanton, considering the cultivation of sorghum in Nigeria (in another paper read at the same conference), comes to the conclusion that the most important West African variety of dura evolved as part of the western Sudanic agricultural complex, probably in western Nigeria, in the Sudan savanna zone, so that the peoples who domesticated it should presumably be included in
74 the Kwa group.* Mauny is of opinion that the origins of the
75 cultivation of sorghum in West Africa go back to Neolithic times.* In any case, it now seems certain that Sorghum vulgare is a plant native to West Africa, and that there is no obstacle to regarding most of the medieval information provided by Arabic sources on the plant dura (durra, dhura, etc.) as relating to this plant.

According to Portères, the Italian name of the plant, sorgo, has no connection as is often suggested, with Latin surgo "I rise", which would allegedly refer to the outstanding height of the ears of this corn; it is rather, so this author asserts, of Hamitic origin. Considering the Arabic name dura etc., Portères compares it with the Sanscrit words zurna, zoorna, as
76 well as with the Nilotic words zor, gor, djor.* Of the modern West African names for sorghum, we must mention wendi or basi of
77 of the Wolof,* abórak, kelénki and sibi (denoting three kinds of sorghum, the white, the red and the black respectively) of the
78 Tuareg tribe of Auelimmiden,* and ngáberi, ngâfŏli, ngâbĕli in
79 Bornu.*

The medieval Arabic sources attest the cultivation of sorghum over the whole of West Africa, or rather, over the whole of northern West Africa, beyond the southern limits of which not a single Arabic traveller or merchant of the Middle Ages ever went. Starting from the west, we should begin with the information given by al-Idrīsī (1154) about the first (i.e. westernmost) section of the first (i.e. southernmost) iqlīm or zone, an area approximately that covered by present-day Senegal. According to his information, the inhabitants of this part of the Sudan, a country with an unusually dry and hot climate, cultivated dhura, i.e. sorghum, as their only grain crop, and from it made some
80 kind of drink.* This information is repeated by the same author

when he describes the Senegalese states of Takrūr and Sillā.* Al-Bakrī (1068) also, speaking of Sillā, confirms the occurrence of sorghum without mentioning the cultivation of any other kind of grain in these regions.* The Wolof, who now live in Senegal and in the neighbouring Gambia, cultivate both Pennisetum typhoideum and Sorghum vulgare, which is their basic foodstuff.* The Wolof of Salum cultivate more sorghum than Pennisetum typhoideum, whereas with the Serer it is the cultivation of Pennisetum that is most important.* Thus we see that some changes in the cultivation of millet must have occurred in Senegal in the course of the eight or nine centuries which separate us from the period described by al-Bakrī and al-Idrīsī.

Further north-east, at Audaghast, on the Sahara-Sudan border, according to information from al-Muhallabī (before 996), quoted by Yāqūt (thirteenth century), the people cultivated both dukhn (Pennisetum typhoideum) and dhura, i.e. sorghum.* This information is also quoted from al-Muhallabī in the first half of the fourteenth century by the Arabic geographer Abu 'l-Fida'.* But according to information given about a hundred years later than al-Muhallabī by al-Bakrī, the majority of the people in Audaghast ate sorghum.* This is further repeated (after al-Bakrī) by Waṭwāṭ, in about 1318.* Ad-Dimashqī (first half of the fourteenth century) reports that, apart from meat, sorghum was the main foodstuff of the people of Audaghast.* None of this information, except that given by al-Muhallabī, constitutes proof of sorghum cultivation in Audaghast — all that is attested is its consumption. An argument against sorghum cultivation in this area is that sorghum needs soils which are both damper and heavier than those of Audaghast. Presumably the people of Audaghast imported sorghum from areas of West Africa which were wetter and lay further south. But according to Leo Africanus (early sixteenth century), in the town of Gualata (Walata) north-east of Audaghast, another town of the Sahara-Sudan borders, and also in the kingdom of Gubir (Gobir), in addition to millet (which here implies Pennisetum typhoideum), the people cultivated a kind of round white grain like chick-pea which, according to this traveller, was not found in Europe, and which is presumably one of the varieties of sorghum.* It must be added that, according to al-Bakrī, the Berber pastoral tribes of the western Sahara used to import sorghum, evidently from the

91 adjacent western Sudan.*

Al-Qazwīnī, quoting Ibn al-Faqīh (the name doubtless refers to Ibn al-Faqīh al-Hamadhānī, who wrote at the beginning of the tenth century), says that according to this source, the food of the inhabitants of the Bilād at-Tibr ("land of gold dust", now the area of the Lower Faleme and Bambuk in the upper Senegal basin, between the Bafing and the Faleme) consisted of
92 sorghum and beans.* Yāqūt repeats this information in a somewhat altered form, referring it not only to the "land of gold dust",
93 but also to the historic state of Ghāna.* It must be remembered that the original version of this passage in Ibn al-Faqīh, which related only to Ghāna, mentions the kind of dura (Arabic dhura, here: millet in general) called dukhn, which has been omitted in al-Qazwīnī's and Yāqūt's quotations.

On the other hand there is no doubt that the millet used as food in the land of Mālī, according to information contained in a geographical work by al-ᶜOmarī (1342-9), was Sorghum vulgare. It was used, this author reports, not only as food by the people, but also as fodder for horses and for beasts
94 of burden.* This cannot be a reference to bulrush millet, but only to sorghum, which provides excellent fodder for animals.

At Augham, a place close by the area of the historic state of Ghāna, and on the way from the town of Ghāna (Koumbi Saleh) to Raʾs al Māʾ (near present-day Timbuctu), four days' journey from Raʾs al Māʾ , sorghum (Arabic dhura) was cultivated; the people of Augham made porridge (ᶜaysh in Arabic) from its
95 grain.*

We pass next to the banks of the Niger below Timbuctu, which was the tribal territory of the Songhai, founders of the state of Gao. Ibn Baṭṭūṭa, who in 1353 went down the Niger through this country, tells us that at a place on the way, on the bank of the Niger, he drank dugnū (dagnō, see below), a drink made of pounded sorghum with the addition of a small amount of honey and sour milk. At this place Ibn Baṭṭūṭa also expected to obtain
96 provisions of sorghum for further travel.*

Maddāsa lay to the north of the middle Niger. According to al-Idrīsī, sorghum grew there together with rice; the
97 grain, so this author reports, was big and made excellent food.* Barth also refers to the cultivation of sorghum on the middle
98 Niger, near the bend of the river.*

Sorghum also provided food for the inhabitants of Tadmekka, a desert town north-east of Gao. This is attested by al-Bakrī, who adds that sorghum, like other kinds of grain, was
99 imported to Tadmekka from Negroland.* Al-Bakrī's information is
100 repeated by Waṭwāṭ (1318).* Ad-Dimashqī also mentions sorghum being imported to Tadmekka, but without saying where it came
101 from.*

According to Ibn Baṭṭūṭa, sorghum was also eaten at the town of Takadda, capital of the Berber sultanate of that name to the east of Tadmekka, on the way from Kaukau (Gao) to
102 Aïr. Ibn Baṭṭūṭa even records the price of sorghum at Takadda.* The situation presumably remained unaltered for centuries, since Barth was able to give information on the cultivation and consumption of sorghum in the nineteenth century in a number of places in the territory of Aïr and in the neighbouring coun-
103 tries inhabited by Tuareg tribes.*

We also have information dating from the first half of the fourteenth century (al-ᶜOmarī, 1342-9) on the consumption of sorghum in Kānem, a name which also covers Bornu, at that
104 time closely connected with Kānem.* In modern times, too, sorghum has been cultivated in the Lake Chad basin; this is attested in
105,106 the accounts of their travels by Barth* and Nachtigal.*

I have already suggested that it is in the Chād area that one should localize the people, or tribal group, whom early medieval Arabic authors call the Zaghāwa. According to al-Muhallabī (975-6), the inhabitants of their country cultivated
107 sorghum first and foremost.* Al-Idrīsī, who in one passage of
108 his work mentions sorghum among the foodstuffs of the Zaghāwa,* in another place speaks of a tribe belonging to this group, called the Saghwa or the Saghawa, living somewhere between the middle Niger and the Lake Chad basin; he reports this tribe as
109 cultivating sorghum more than any other kind of grain.*

Leo Africanus (early sixteenth century) gives a few facts on the cultivation of millet, but usually without specifying which particular kind he is speaking about. The information relates to Gualata (Walata) (where, exceptionally, he
110 reports that both kinds of millet were cultivated),* and also
111,112 to Casena (Katsina)* and Zamfara in Hausaland,* and the land of
113 Borno (Bornu).*

Rice

With the two kinds of millet, Pennisetum typhoideum and Sorghum vulgare, rice plays the most important part in the grain foods of the peoples of West Africa, and particularly those of the Sudanic zone. Rice includes both grain collected from wild
114 species, and that from the cultivated forms.* Portères, one of the most distinguished experts on the edible plants of Africa, has noted that there are four basic varieties of rice in this continent, of which two, Oryza Barthii and Oryza breviligulata, grow in a wild state, whereas the other two, Oryza glaberrima
115 and Oryza sativa, are cultivated.* The last variety is of Asiatic origin, and was introduced into Africa at a comparatively late date; O. glaberrima is a variety of genuinely West African origin, its ancestor being the wild variety O. breviligulata, which occurs in the Sudan and in the Sahel (the Sudan-Sahara borderlands), from the Atlantic to Lake Chad and to the Ubangi-Shari. Portères also comes to the conclusion that O. glaberrima was brought under cultivation about 1500 B.C. at two main centres. The older of these, on the middle Niger, he associates with the peoples of the old Nigritie civilization, and then with the Mandingoes; the more recent centre, of secondary character, in Senegambia, he associates with the peoples of the Megalithic culture in this area which he says flourished about 1500-800 B.C. Be this as it may, Portères excludes the possibility of connecting the cultivation of rice in Africa with the cultivation of the plant in Asia. He asserts that the cultivation of rice in Africa has evolved from the collecting of the local wild
116 varieties.*

It seems that the distribution of the wild species of rice whose grain is collected is somewhat larger than Portères suggests. Barth states that the wild species of rice grew in areas extending from the southern districts of Bornu, Bagirmi and Wadai to El-Haudh and Baghena, on the southern edge of the
117 westernmost Sahara,* and also in the forests of the Adamawa
118 country.* Nachtigal reports that the wild species of rice grew
119 in Darfur.* Schweinfurth, the well-known African scholar, in a letter to Maurizio, mentions yet other areas where the wild species of this plant grew on the African continent — Southern Kordofan, Ethiopia (Abyssinia), the Nuer country (Bahr al-Ghazal), on Lake Tanganyika, etc., also confirming its occurrence on the

Senegal, where it had been attested by European travellers as
120 early as 1828.*

The fairly numerous references in medieval Arabic authors simply attest that rice occurred in the various countries of West Africa in considerable quantity. But, with one exception, they do not specify whether it was collected wild rice or the cultivated plant. Nor can it be deduced from these references whether the Arab authors mean native African rice, or the Asiatic variety, Oryza sativa (if, indeed, the cultivation of this variety had reached West Africa by the Middle Ages). For this reason, Mauny's theory that the cultivation of rice came to Africa from the countries of the Mediterranean, where it had
121 been promoted by the Arab caliphs from the eighth century,* seems to be without much foundation. The Greek geographer Strabo (who wrote in about A.D. 12) does not mention the cultivation of rice in Egypt, while he says that it was cultivated at Augila (Aujila), an oasis in Cyrenaica. Bearing in mind the connections between this oasis and the Sudan during the early Middle Ages, it can be assumed that the rice cultivated at Augila at the beginning of our era must have belonged to Oryza glaberrima rather than to O. sativa.

The most westerly country of West Africa in which rice was found during the Middle Ages was Takrūr on the Lower Senegal. The Arab traveller ʿAlī al-Janahānī al-Maghribī (whose information about this country comes through the intermediacy of al-Qazwīnī, the thirteenth-century Arab geographer and cosmographer), reports that at Takrūr (using the Arabic word madīna which may mean both a large town and a country) "honey, butter
122 and rice were very cheap".* It is possible that he is referring to the grain of the wild species of rice which grew on the Senegal, where it was collected by the Frenchman Leprieur in
123 1828.* The present-day Wolof cultivate relatively small amounts of rice, although in the southern provinces, under the influence of the Mandingoes, rice cultivation has been gaining in importance. But their main foodstuff continues to be millet, though, (especially in towns) they eat a fair amount of rice (rice in the Wolof language is malo). Gamble, to whom we owe this
124 information, gives a few recipes for foods made from rice.* On the other hand, the Serer, another people of importance inhabiting the area, cultivate rice as much as millet whenever

conditions permit (even on the coast of the Atlantic the Serer
125 have rice-fields).*

In the villages on the trade route between Īwālātan (Walata) and the town of Mālī, areas which were once included in the historic state of Ghāna, it was possible to supply oneself with rice (as well as millet, fonio and beans). This we know from the account given by Ibn Baṭṭūṭa, who followed this route
126 in 1352.* It seems that the consumption of rice had increased since the time of Ibn al-Faqīh al-Hamadhānī (early tenth century) who reports that in his time the main foodstuff of the inhabitants of the historic Ghāna was millet (dukhn) and beans,
127 omitting all mention of rice.* But we must also consider a statement by Barth that in the mid-nineteenth century, wild rice grew in the lands of El-Haudh (Hodh) and Baghena, which were
128 once included in the state of Ghāna.* The economic importance of wild rice must also have been quite considerable in the early stages of history. Ibn Baṭṭūṭa adds that the consumption of rice
129 was detrimental to the health of the white man.*

In the land of Mālī (the area occupied by the Malinke people of the Mande group), rice, at least during the first half of the fourteenth century, was among the basic foodstuffs. This
130 we know from the geographical work by al-ᶜOmarī (1342-9),* the
131 information being corroborated by Leo Africanus.* According to him, at the town of Ghinea (Jenne, Djenne of the European maps) on the inland delta of the Niger north-east of the former capital of the state of Mālī, there was great abundance of rice.

Rice is also of some importance with the Bozo people, living near the territory of Mālī; their language has, for
132 instance, a separate expression for rice flour (duga du).* Rather further north, but still within the boundaries of the historic state of Mālī, in the region of Timbuctu, rice was the basic foodstuff in the middle of the nineteenth century, whereas
133 bulrush millet was regarded as a luxury.* Rice, with bulrush millet, was at that time the principal article brought to the
134 markets of Timbuctu.* Further south-east, in Upper Volta, rice is a food of recent origin, brought from the west and north-
135 west, from the country of the Mande.* Nevertheless, the Senoufo people, who inhabited these territories about the middle of the nineteenth century, cultivated rice in fields, together with
136 millet, sorghum and maize.*

During the Middle Ages a very important part was played by rice in the territory of the Songhai and in adjacent areas on the Niger bend. Al-Idrīsī (1154) reports that much rice
137 grew as well as millet, at the "town" of Maddāsa on the Niger.* Of course, we do not know whether he means cultivated rice or the wild species. Ibn Baṭṭūṭa speaks of a profusion of rice
138 among the foodstuffs in the town of Kaukau (Gao).* This is confirmed by Leo Africanus who reports great quantities of rice in
139 the town (which he calls Gago).*

The part played by rice in the economy and food of these areas in later times (the nineteenth century) has been described by Barth. He reports that at the town of Kabara, inhabited by the Songhai, rice was cultivated in small quantities. Nevertheless it was an important article of trade; it was sold as a cooked food, boiled, in vegetable sauce, or in the form of
140 thin cakes roasted in shea butter (karite, bulánga).* In the land of Burrum, adjacent to Gao (on the Niger) the main food-
141 stuff observed by Barth was unhusked rice known as kōkɛsh.* Rice also played an important part in the food of the Tuareg (Berber) tribe Auelimmiden, occupying areas east and north-east of the Songhai territory. It appears from Barth's account that rice was eaten boiled in water (tarari), boiled with a generous
142 amount of butter (abílolō), or boiled with meat (markhfé).* Unfortunately we do not know anything about rice consumption in the Berber kingdom of Tadmekka which, during the Middle Ages, occupied areas now inhabited by the Auelimmiden. From the available information it does not seem to have been important in the daily fare of the local population.

On the other hand, we do have some information about the occurrence of rice in the provinces of Hausaland, the country lying south-east of the Songhai territory. We owe this information to Leo Africanus, who reports that a profusion of rice grew in the province of Cano (Kano), and that much was also
143 to be found in the provinces of Gobir and Zamfara.* This information is corroborated by Barth, who 400 years later saw rice-fields in the neighbourhood of the town of Sokoto, and was even
144 offered rice as a gift.*

According to al-ᶜOmarī (1342-9), rice, with wheat and sorghum, was the main basis of food for the inhabitants of the
145 land of Kānem,* a name which must be understood to include

Bornu, joined with Kānem since the fourteenth century to form a single state. According to other information given by this geographer, derived from the ascetic ᶜOthman al-Kānemī (a close relative of the king of Kānem), rice grew in this country without sowing.* This is confirmed by another informant cited by al-ᶜOmarī.* It is also in conformity with what we know about rice in Bornu from nineteenth-century European travellers. Thus Barth reports that the rice brought for sale at Kukwa (Kuka, the capital of Bornu) north-west of Lake Chad, was a wild species, dispersed in the forests of this country.* He observed this wild species growing in the marshes on his way from Kukwa to Mandara.* Although in Barth's opinion this rice was of mediocre quality, it cost twice as much as the local millet.* But, in addition to this wild rice, Barth also tasted good white rice in Bornu, but this, he reports, was exceptional.* Nachtigal, also, reports that the wild plant called firgămi or shinkâfa in Bornu was much inferior to cultivated rice. It was consumed either as common porridge or else it was used to prepare sweet dishes, as for example nâkia (soft-boiled rice with honey and butter).*

Fonio

Of outstanding importance among the foods of the peoples of West Africa is the cereal called fonio (the name now in use by the Fulbe), the botanical name being Digitaria exilis. This plant, cultivated at present from Cape Verde to Lake Chad, is derived from the wild species D. longiflora. This cereal is also known by the names fundi (cf. yfunde in Portuguese sources), findi (in the Wolof language), pene (in the language of the Temne of Sierra Leone and so recorded already in 1607 by Finch) and achcha (acha). This last name is used in the Hausa areas of Nigeria.* For a number of tribes of northern Nigeria as well as for some peoples within the Republic of Guinée (for example, the Tenda), this plant is the basic foodstuff of the local population.* The most numerous varieties of fonio are found in the basin of the upper Senegal and Niger rivers, and it is there, it would seem, that the site of its domestication should be sought. Fonio is a very resistant plant and does not require very careful cultivation. It prospers in areas too sterile for other crops; it also prospers in years of drought, when other crops per sh for lack of humidity. Sometimes it grows wild. Hence in the European literature the plant is sometimes called

"hungry rice".

The information contained in the medieval Arabic sources about the cultivation and consumption of fonio consists only of two brief references in Ibn Baṭṭūṭa and of a slightly fuller reference in the geographical work by al-ᶜOmarī, who wrote between 1342 and 1349, a few years before Ibn Baṭṭūṭa's journey to West Africa (1352-3). All these relate only to the territory of the state of Mālī, which at that time comprised a large portion of the western Sudan, mainly in the basins of the upper Senegal and upper Niger. Ibn Baṭṭūṭa, relating his journey from the town of Īwālātan (Walata) in Mālī to the capital, also called Mālī, reports that in the villages on the way, the local people sold the travellers the grain of fūnī (fōnī), similar to mustard-seeds, from which couscous and porridge were prepared. The Arabic word, which may be read also as fūniyu or fōniyo, exactly reflects the present-day name of this crop in the
155 language of the Bambara and the Malinke.* At another place in the account of his travels, Ibn Baṭṭūṭa tells us that at Mālī he received from the notables of the town a gift of two large
156 bags of fūnī.* According to al-ᶜOmarī, fūnī "is a kind of hairy lupin; it is threshed on the threshing floor, yielding something like mustard seed, but rather smaller in size, and white. The seed is washed and ground, and dough is made from it which is
157 eaten".*

Neither Ibn Baṭṭūṭa nor al-ᶜOmarī say whether fonio was a cultivated cereal or the seed of a wild plant. The latter seems equally probable. In fact, in areas adjacent to the former state of Mālī inhabited by the Songhai, fonio (ansi in the Songhai language) is not cultivated; it grows wild in damp hollows in areas covered with bush. The Songhai collect it in
158 special baskets into which the seed is shaken.*

Fonio is among the cereals currently consumed, not
159 only in the territory of the former Mālī state,* but also in
160 other Sudanic lands, including Senegal* and Hausaland and
161 adjacent areas in Nigeria.*

Wheat

In the northern parts of West Africa, on the Sahara-Sudan borders, wheat was also cultivated in small quantities during the
162 Middle Ages,* and it was also imported to some extent into various places in the same area. Wheat cultivation penetrated

through the Sahara to the western Sudan from Egypt and the lands of the Mediterranean basin, where it was already known in remote antiquity; we do not know, however, at what period this penetra-
163 tion actually took place.* According to Mauny, it could have
164 happened at any time since the Neolithic age.* But in all probability it happened after the conquest of North Africa by the Arabs. Barth believed that wheat, known in the Sudan only under its Arabic name (qamḥ), appeared there at a relatively recent date (about 1750) and that for this reason it was both
165 rare and expensive.* As regards Bornu, where Barth obtained his information about the cultivation and consumption of wheat, we might perhaps accept his thesis of the late appearance of wheat, though with caution. In other Sudanic areas, however, this grain had already made its appearance in the Middle Ages, a fact attested by references in various Arabic sources.

Al-Idrīsī (1154) firmly states that the inhabitants of the westernmost parts of the Sudan (i.e. present-day Senegal),
166 had no wheat whatsoever.* It was different at the town (and oasis) of Audaghast, at the southern extremity of the Sahara, on the way from Sijilmāsa to the historic Ghāna. According to a passage in the now-missing work of al-Muhallabī (975-6), trans-
167 mitted by Yāqūt (thirteenth century)* and Abu ʾl-Fidāʾ (fourteenth
168 century),* the Berber population of Audaghast sowed wheat as well as millet, sorghum, beans and peas. Waṭwāṭ (1318) says that at Audaghast, wheat was eaten only by the princes, while their
169,170 subjects fed on durra (sorghum).* Al-Bakrī reports* that at Audaghast, the people cultivated wheat (Arabic qamḥ), using hoes and pouring buckets of water on it. But the local production can only partly have satisfied the demand, since, as the same geographer reports, wheat was among the produce imported to Audaghast from the "Moslem lands" (Bilād al-Islām), i.e. North Africa. It is possible that wheat was imported to Audaghast mainly from Sijilmāsa, where, according to al-Bakrī, an excellent variety
171 was cultivated.* It is also possible that it was from the inhabitants of Sijilmāsa, who maintained constant commercial and cultural relations with Audaghast, that the people of the latter town learnt to cultivate wheat. It must be added that this population in the tenth and eleventh centuries consisted in considerable part of immigrants from North Africa, Arabs and Berbers, who may well not only have brought wheat-culture with them to

Audaghast, but also spread it throughout the western Sudan.

In the town of Mālī also, where, during the first half of the fourteenth century, there was a whole district inhabited by Arabs and Berbers who had come from the north (which is
172 attested by Ibn Baṭṭūṭa), wheat was consumed,* though it was a
173 rare plant there.* Perhaps here, too, we should assume the influence of the North African immigrants; perhaps it was principally for them that wheat was sown or imported.

It may be noted that wheat was cultivated in 1506-7 in the Baffor or Adrar Mountains in Mauritania, north of Audaghast. This information is given by Valentim Fernandes, who adds that it was not consumed by the local people, but that it was cul-
174 tivated only to make bread and couscous for "visitors",* i.e. presumably for North African merchants who went with their caravans from Morocco to the western Sudan.

On the Niger (in the text: "the river Kūkū") near the town of Kūkū (Kaukau or Gao), capital of the Songhai state,
175 wheat was grown, as we learn from a work by ad-Dimashqī.* According to Ibn Baṭṭūṭa, wheat was also sold at the town of Takadda, to the east of Gao on the way to Aïr, but was consumed
176 there by merchants and strangers only.* Whether this wheat was produced on the spot, or was imported, possibly from Gao, it is hard to say.

It is possible that at that time wheat cultivation was also introduced into Hausaland, where in the nineteenth century and up to the present it occasionally occurs, partic-
177 ularly in the Kano province.* Its presence is also attested from the early nineteenth century in Bornu territory, where it was quite a rarity; its price in the nineteenth century at the market
178 of Kuka was twice as high as that of bulrush millet.* It seems that wheat cultivation was introduced into the basin of Lake Chad from Wārglān (Wargla in present-day Algeria); from there, in the twelfth century, it was imported into the country
179 inhabited by the Zaghāwa.* The peoples living in Kawār, Borkou and Tibesti, who are in all probability descendants of peoples once included in the union of the Zaghāwa tribes, have in modern times cultivated and consumed wheat in quite considerable quan-
180 tities compared with the amount of millet cultivated.*

As we see from the above Arabic sources, wheat was already known in West Africa in the Middle Ages, but was very

seldom cultivated there. There are, indeed, a number of records proving it to have been brought from the north. It played only a minor role in the nourishment of the people, being an expensive crop, and in some cases even a luxury. Its occurrence is frequently associated with the white population, the Arabs and the Berbers, who came from the north, and had presumably brought with them the tradition of consuming, and probably also of cultivating this crop. From these groups the tradition was gradually adopted by some of the peoples of the Sudan and the eastern Sahara. It is not impossible, however, that wheat-culture also penetrated to the Sudan from Nubia, where wheat was
181 cultivated as early as the Middle Ages.*

Barley

Barley was among the crops cultivated in antiquity in Egypt and
182 in North Africa.* From these places its cultivation presumably spread to the oases of the northern Sahara, and at some unknown date reached and passed the southern limits of the desert. The consumption of barley by the Berber Azenegues (Zenaga) is
183 attested by Fernandes;* it is still cultivated up to the present
184 in some parts of Mauritania.* Barley is known also to the Tuareg
185 of the Sudan, who call it by a special name, farkasúbu.* It was probably from the north that barley reached the town of Ghinea (Jenne); in the early sixteenth century it was cultivated there
186 on a large scale, a fact recorded by Leo Africanus.* He also reports that the land of the Hausa province of Casena (Katsena)
187 was good for the cultivation of barley and millet.* It is possible that barley penetrated to Katsina from Egypt through the country inhabited by the Teda, where this grain is still
188 cultivated (for example, in Tibesti),* as well as through
189 Bornu.* By contrast, in the town of Mālī and its neighbourhood barley was completely unknown in the fourteenth century; it was
190 not grown there at all, as is distinctly emphasized by al-ᶜOmarī,*
191 and al-Qalqashandī after him.* There is another piece of information from the Spanish author Marmol (1573), who states that in the second half of the sixteenth century barley was cultivated at Timbuctu and Gao, where, as we know from other sources,
192 wheat was also cultivated.*

SEEDS (AND ROOTS) OF VARIOUS WILD GRASSES

In discussing the gathering of wild rice, I have drawn attention

to the great importance of the collecting of its seeds, both in the Middle Ages and at later periods. But rice was not the only plant whose seeds were collected for purposes of consumption. The medieval Arabic authors record the use of the seeds of various large-grained grasses, especially those growing in the grasslands and on the Saharan sands. Unfortunately they omit to mention their names and descriptions, thus making it extremely hard to identify them. The information available is as follows:

Ad-Dimashqī, writing of the pastoral Berber peoples, ancestors of the present-day Tuareg, occupying Saharan territory from Sijilmāsa to the Sudan and Ghadames, reports that these peoples fed on meat, milk and grain (Arabic ḥubūb) which the earth itself produced in spring, as well as on millet brought
193 from elsewhere.* This information relates to the whole Saharan area, and thus may be taken to refer also to the southern parts adjacent to the Sudan through the transitional zone called the Sahel.

A more detailed account is given by al-Bakrī (1068). According to his information, the Berber population of the large town of Tadmekka, north-east of Gao, at the southern edge of the Sahara, fed on meat, milk and a certain kind of grain
194 produced by the earth without cultivation.* This information was
195 repeated from al-Bakrī by Waṭwāt (died 1318),* and by ad-Dimashqī, who adds that the earth produced this grain in
196 spring.*

I will include here another reference, though it is not strictly related to our present subject, as it concerns the consumption not of grain but of "roots", presumably the tuber of some plant. I have not been able to ascertain its botanical identity with certainty, but in all probability the information relates to one of the grasses. This information comes from al-Idrīsī (1154) and it refers to Negro peoples who were living by pastoralism and food collecting in territories placed by that geographer in the neighbourhood of the Ṭanṭana Mountains, now known as Tassili-n-Ajjer in eastern Algeria. I consider these peoples to be identical with the Teda-Daza group and other kindred peoples. Nowadays they occupy areas lying outside the boundaries we have laid down for our present study, though they extend towards the Lake Chad area and towards the historic state of Kānem-Bornu, which undoubtedly once included some

of the tribes from this group. Al-Idrīsī, writing of these peoples, says that they had only a small number of camels, and fed mainly on "the roots of the plant named aghrisṭis, which the Arabs call najīl. The plant grows on sandy soil. They grind it with a grindstone, obtaining flour from which they make bread
197 which they use for food."*

This information, the most detailed of all we can find about the collecting of wild grasses (?), I believe may also relate to the pastoral-collecting peoples who lived in the borderlands between the Sahara and the Sudan, and among them the inhabitants of Tadmekka.

Let us consider now what plants these could be. The monograph on the peoples of the Teda-Daza group by Chapelle, who gives a whole list of the "wild grain" consumed in the areas
198 inhabited by them from Tibesti to Ennedi, is invaluable here.* According to Chapelle, the peoples of the Teda-Daza group, up to the present, collect and eat various seeds, including those
199 of gomshi (Arabic mrokba, Bot. Panicum turgidum),* deger (Cenchrus Prieuri, a kind of wild fonio, known in the Chad area
200 under the name of krēb),* and kiiri (Sorghum virgatum, a kind of wild sorghum), from which a red pap of little nutritive value is made. Barth (1849-55) on his way from Bornu to Kanem observed a woman collecting the seeds of the kréb plant, known also as kashá in that country. Barth identifies kréb as varieties of
201 Poa (Poa Abyssinica).* He goes on to say that the people of Bornu, Bagirmi, Wadai, particularly the Arabs of the Shuwa tribe recently settled in the country, consumed considerable quantities of the grain. It was a light and palatable food,
202 though requiring much butter.* Barth also acquired some of the
203 same wild cereal in Bornu;* in Bagirmi a food was made of it
204 with the addition of butter or milk.* Barth mentions that it was eaten in the neighbourhood of Libtako (Liptako), a territory originally belonging to the Gurma tribe (from the Volta group),
205 and taken over by the Fulani.* He also ate kréb at Máseña,
206 (Mássenỹa).* Of special interest to us is Barth's account of the various species of kréb (Poa) known to the Tuareg
207 Auelimmiden,* who now occupy territories formerly included in
208 the Berber kingdom of Tadmekka.* It is possible that it was the same kind of wild grass that gave the edible grain mentioned by al-Bakrī in his account of the food of the inhabitants of

Tadmekka.

Another German traveller, Nachtigal, includes the different varieties of krêb (kashâ) in the Eragrostis genus, saying that they were some of the numerous seed-bearing grasses from the seed of which a tasty, easily digestible and nutritive porridge (ᶜaysh) was prepared. Nachtigal observed the collecting of seeds of the same plant in Bornu,* among the Baele on Lake Chad,* at Bagirmi* and Wadai.*

There was another wild grass according to Barth, whose seed was collected by the Tuareg in the northern Sudan, in the neighbourhood of Agades among other places, and in the whole area between Bornu and Timbuctu, thus including the neighbourhood of Tadmekka; this was a plant whose local Arabic name was khaskanît, and the Sudanic name karéngia. Barth identifies it as Pennisetum distichum;* but it seems that it must be identical with the plant recorded by Nachtigal under the Arabic name of askanît (and known in Bornu as ngibbi), which he identified as Cenchrus echinatus.* This plant is known to the Auelimmiden, the present-day inhabitants of the neighbourhood of Tadmekka, who call it úzak.* It has also another name, eniti. Barth says it was an important foodstuff among the Tuareg. He himself obtained the seeds as provisions near Gao.* Writing of the gathering of úzak by the Tuareg in areas to the east of Timbuctu, Barth suggests that it was identical with the grain of a wild grass eaten by the inhabitants of Tadmekka.* While this is quite probable, we must, however, remember that the grain of other wild plants was also gathered, including that of kréb. This was collected also in the neighbourhood of Libtako (Liptako),* and in Bornu.*

Though the list is not complete, these wild grases with edible seeds nevertheless testify to the importance of the gathering of wild crops in the food of the area under discussion.*

FOODS MADE FROM CEREALS AND FROM WILD GRASSES

As can be seen from the foregoing chapters, there are abundant references in the medieval Arabic authors to the cultivation of various kinds of cereals, to collecting the seeds of grasses and to the consumption of this grain, but the information they provide on the foods made from them is infrequent, generalized,

and accidental.

Al-ᶜOmarī (1342-9) reports that, in Mālī, fonio (called fūnī by this author) was threshed on the threshing-floor to obtain grain; after threshing, the grain was washed, ground, and made into dough. Al-ᶜOmarī thus gives a full account of the
221 making of a food from fonio, from threshing to dough-making.* As to the grinding of the grain and other parts of edible grasses, al-Idrīsī (1154), who mentions the making of bread from roots (tubers, uṣūl in Arabic) of some unknown wild grass by the Negro peoples of the Teda-Daza group, reports that a "stone"
222 was used to grind the tubers into flour.* This method is still used in the Sudan. Nachtigal observed it, for example, in Kanem and Wadai, i.e. in areas adjacent to the territories inhabited
223 by the peoples of the Teda-Daza group.* In areas where there are no hard stones (as, for example, in Bornu) grain is pounded
224 in wooden mortars.*

The information about the "washing" of grain before grinding is rather puzzling. Was this done to remove dirt? When grain was pounded in mortars, it was a common custom to wet it to prevent its spilling during pounding. But perhaps al-ᶜOmarī meant soaking the grain in water? This, Nachtigal says, was the way they did it in Bornu, where the grain was often soaked in
225 water to make it "sour", and then dried.* This procedure, according to him, was to make the flour more savoury, and so to add more flavour to the porridge prepared from it. In another place, Nachtigal describes the sour pancakes which the people of Bornu ate, made of the flour of the dukhn millet (Pennisetum
226 typhoideum), with a herb sauce and garnished with beef or lamb.* Were these not exactly the pancakes that al-ᶜOmarī mentions when he speaks of dough made of "washed" fonio? But this may
227 also be dough of the túwo type which Barth tasted at Tessawa,* which is made of flour mixed with hot water, honey and milk, as seen also by Nachtigal in Bornu, where this sort of dough was
228 called tigra.*

Ibn Baṭṭūṭa, describing his journey from the town of Īwālātan (Walata) to Mālī (1352), mentions the preparation of
229 porridge (ᶜaṣīda in Arabic) from fūnī (fonio).* The word ᶜaṣīda
230 is a name applied in Tunis to a thick porridge made of flour.* The Tripolitanian Arabs call this kind of porridge bazīna,
231 while the Sudan Arabs call it ᶜaysh.* Ibn Baṭṭūṭa's reference

is the only one in medieval Arabic sources to such porridge, which in large areas of the Sudan serves nowadays as the principal food of the people. In Bornu, porridge made of dukhn millet or durra (sorghum) flour is the main foodstuff of the
232 people, meat being a desirable addition to it.* Nachtigal mentions porridge made of dukhn, consumed in Bornu with a
233 vegetable sauce and garnished with beef or lamb.*

Barth ate such a porridge (which, incidentally, he calls pudding), which he describes as of excellent flavour,
234 made of sorghum with meat and soup (sauce) added.* The sauce added to the porridge was made, among other things, of the
235 plant called mulūkhiyā (Corchorus olitorius).* A similar method
236 of preparation was known on the middle Niger.* Porridge was sometimes eaten with milk, as observed by Barth among the mixed population (Tuareg and Fulani) on the middle Niger, between the
237 towns of Sinder and Say.* In addition to herbs and vegetables, the sauce also contained dried meat or dried fish with the
238 addition of spices.* Nachtigal gives an account of such sauces added in Bornu to dishes made of flour. The sauce was usually made of leaves of herbs or trees (e.g. baobab leaves), the leaves and fruit of the dum palm, beans, Bambara groundnut, etc. — all cooked with fresh or dried meat. When dried meat (in Arabic qadīd: here, cows' meat) was used, it was pounded to
239 powder in wooden mortars before cooking.* Sometimes dried fish
240 was substituted for meat.* Flour, salt, pepper, etc. were added to make up the gravy (sauce). Porridge of this kind with various
241 sauces is in common use in the Sahara.*

Ibn Baṭṭūṭa also mentions the Sudanic population (strictly speaking, the people of the town of Īwālātan, i.e. Walata) consuming porridge (jarīsh in Arabic) made of millet, anilī (Pennisetum typhoideum), mixed with a small amount of
242 honey and sour milk.* At Logone in Bornu, Barth ate porridge
243 sweetened with honey (but without milk).*

Finally, Ibn Baṭṭūṭa, describing his journey from Īwālātan (Walata) to the town of Mālī, records that fūnī (fonio)
244 was sometimes used to make couscous (Arabic kuskusu).*

West African peoples also knew a kind of flat bread or baked pancake; this, however, was rather seldom used, and was something of a luxury. We have only one record of people who had such pancakes in fairly common use. This refers to the

areas south of the town of Zawīla (i.e. of Fezzan) inhabited by semi-pastoral, semi food-collecting Negro tribes, in whom we have no difficulty in recognizing the ancestors of the present-day peoples of the Teda-Daza-Zaghāwa group. The information is given by al-Idrīsī (1154), who records that the main food of these peoples was plants called aghristis or najīl; the tubers of these were dried, ground with a stone to flour from which
245 pancakes were made (Arabic khubz).* Ibn Saʿīd (thirteenth century) in a passage in his geographical work quoted by Abu ʾl-Fidāʾ (fourteenth century), says that at the "town" of Barīsā, included by the author in the land of Takrūr (present-day Senegal), bread (Arabic khubz) was found, but only as a luxury consumed exclusively by the "chiefs", i.e. by the most
246 important and wealthy social group of the town, or province.* Presumably here, also, the author does not mean bread proper, but pancakes, made probably of millet flour, millet being the principal cereal crop of the country, along with rice. That pancakes were among the most valued foods in Negroland is also shown in Ibn Baṭṭūṭa's account. During his stay in the town of Mālī (1392-3) he was sent a "hospitality gift" by the local king, Mansā Sulaymān — a magnificent meal, according to Sudanic notions, consisting of three round "loaves"(Arabic qurs, which really means a flat pancake) of bread, a piece of beef fried in vegetable butter (ghartī, karite, shea butter), and a hollow
247 gourd or pumpkin filled with sour milk.*

In later times, bread (or pancake) was more often in use, especially in the area of the former state of Mālī and the Songhai state. According to Leo Africanus, at the town of Ghinea (Jenne), for money the people used pieces of iron with which
248 they bought "things of small value, such as bread".* Similarly, according to the same author, at the town of Gago (Gao) bread
249 was available in plenty.*

Moreover, the pastoral Berber peoples of the southern Sahara, who maintained close contact with the Sudanic peoples, also sometimes ate bread. Leo Africanus, who tasted this bread
250 when visiting the chief of the Berber Zanaga (Zenaga) tribe,* reports that it was made of unusually fine flour of two kinds
251 of millet*(presumably Pennisetum typhoideum and Sorghum vulgare). The chief of the Zanaga told him that his supplies of grain were obtained to please foreign travellers — meaning

probably North African merchants — who crossed the territories
252 ruled by him.* But it was not only at the chief's table, Leo Africanus goes on to say, that bread was to be found; it was also eaten, though admittedly only on solemn occasions and important holidays, by other members of the tribe. Here, too, it is evidently pancakes rather than bread properly so called that are meant.

Unfortunately the medieval Arabic authors have not left any account of the baking of bread or pancakes in the western Sudan or in the Sahara areas adjacent, except al-Idrīsī who describes the pancakes made from the flour of aghristis tubers by the inhabitants of the eastern Sahara. However, everything seems to point to the fact that the baking of flat pancake-like bread in the land of Takrūr, in the towns of Mālī (Niani), Ghinea (Jenne) and Gago (Gao), and by the Berber Zenaga on the Arawan (Araouan) plateau did not differ very much from the baking of bread in the Baffor Mountains (Adrar) in Mauritania, of which we have an account by Valentim Fernandes (1506-7). His description runs as follows: "When a visitor comes, they immediately grind wheat, knead some [of the wheat flour] for bread, which they put into the oven, in which they also put a piece of camel or other meat. Then they shut the
253 oven, bake, etc. [sic]."* Thus we see that what is meant here is unleavened bread, or a baked pancake rather than bread
254 properly speaking.* In all probability this was not the only kind of bread, and there were already also "sour pancakes" as recorded by nineteenth-century travellers in their accounts of the Sudan.

Apart from bread (or pancakes) of local baking, the inhabitants of the southern Sahara sometimes ate bread brought from North African countries. This is attested by al-Bakrī when describing the husbandry of the Berber Lamtūna tribe in present-
255,256 day southern Mauritania;* this is corroborated by ad-Dimashqī.*

It should be added here that bread was known under the name of tegílle in the Auelimmiden dialect of the Tuareg (Berber) inhabitants of the areas north-east of Gao. The name
257 is related to the name used for bread by the Songhai: tákelit.*

Flour was sometimes used to make qaṭāʾif, fritters
258,259 with honey,* or jauzīnaqāt, nut cakes,* and other kinds of sweetmeats. This is recorded by al-Bakrī, who highly praises

the talent of the skilful Negro women who cooked for him at the
260 town of Audaghast,* but this confectionery, as we have already said, can hardly be regarded as food typical of this part of Africa in view of the large number of immigrants from North Africa in these countries. It is possible that qaṭāʾif was something like the small wheat fritters soaked in honey and buttered, which were in common use in nineteenth-century
261 Bornu.* Cakes made of the dukhn flour with honey were also sold
262 at this period at Kuka, the former capital of Bornu.*

YAM

Arabic sources also give us information on yam (Dioscorea cayenensis and D. rotundata), i.e. yellow and white Guinea yam, which, with cassava (a plant of American origin), now forms one
263 of the most important foodstuffs for the local peoples.* Here is a passage from Ibn Baṭṭūṭa, who ate a meal made from yam during his stay at the town of Mālī in 1352-3:

264 > Ten days after our arrival we ate a porridge* made from a root resembling colocasia, and called al-qāfī, which they prefer to all other dishes. We all fell ill — there were six of us — and one of our number died. For my part, I went to morning prayer and fainted there. I asked an Egyptian for a loosening remedy and he gave me something called baydar, made from vegetable roots, which he mixed with aniseed and sugar, and stirred in water. I drank it off and vomitted what I had eaten, together with a large quantity of bile. God preserved me from death, but I
265 > was ill for two months.*

Mauny, who knows of Ibn Baṭṭūṭa's account, correctly identifies al-qāfī as yam, but he does not say which species is referred
266 to.* We must remember that, in addition to the two species of yam already mentioned, people in West and Central Africa nowadays know several others, among which we should mention
267 firstly the water-yam (Dioscorea alata).* I think that this is the kind which Ibn Baṭṭūṭa means. Mauny is right in associating the Arabic word al-qāfī (al- being the Arabic definite article) with the names of the plant in the western Sudan — kappé (kappe) in the language of the Tukolors, descendants of the early inhabitants of the land of Takrūr; khabi in the language of the Susu, one of the Mande group; and kapé (kape) in Fulani. The Arabic word is evidently a fairly accurate transcription of the name of yam, particularly in the Tukolor and Fulani languages; the Arabic letter q frequently corresponds to the k

of the Sudanic languages, while Arabic f is often used by medieval Arabic authors to transcribe the sound p which has no equivalent in the Arabic alphabet. Another argument for the identification of the plant gāfī with some of the West African species of yam, apart from the identity of name, is Ibn Baṭṭūṭa's information that the plant "resembled colocasia" (Arabic qulqās). This plant, also known as taro (Bot. Colocasia antiquorum), is commonly cultivated in the damp parts of the tropics for its edible bulbous roots which, when pounded and cooked, provide a highly valuable food. It originated in south-east Asia, and was
268 well known to the Arabs in the Middle Ages.*

The most striking thing in Ibn Baṭṭūṭa's account is that after eating a porridge made from yam his party all fell ill, and one of them actually died. In all probability, the porridge had been prepared from some highly poisonous variety of yam which had not been prepared in the proper way. It must be borne in mind that yam tubers contain a poisonous alkaloid, dioscorine, which in some species occurs in considerable quantity; in other, edible, species, it occurs only in small amounts which can quite easily be removed by repeated washing,
269 and particularly by cooking.* The French naturalist Perrier de la Bâthie reports that he once fell seriously ill after eating a
270 badly-prepared poisonous variety of yam.* This immediately recalls the misadventure that befell Ibn Baṭṭūṭa.

On the other hand it is not impossible that the yams eaten by Ibn Baṭṭūṭa were the tubers of Dioscorea dumetorum, a plant which is found in extensive areas of West Africa, both cultivated and growing wild. This species is not so popular as Guinea yam or water-yam, but it is cultivated by some of the peoples of the West African forest zone. It is also frequently cultivated in eastern Nigeria, in some cases for religious
271 purposes.* The wild Dioscorea dumetorum is poisonous enough to
272 be used as fish poison, and also to poison arrows.* But it can be used as a food, usually during famine, but only after the tubers have been repeatedly washed and then cooked to remove the poison. The plant grows chiefly in the Congo, where there are several varieties, some of which are considered to be of little value, while others are in great demand among the local people. Unfortunately I have no information about the occurrence of this plant in the neighbourhood of Mālī, but I think

that probably it could have grown there, at least during the
273 medieval period.* At present, various species of yam are cultivated in southern areas of the ethnic territory of the
274 Mandingoes,* by contrast with the northern area where yam has
275 been displaced by cassava, a plant of American origin.* Yam is
276 also found in the southern parts of the Voltaic region* where it is cultivated by various peoples, including the Senoufo, who
277 bake flat cakes made of yam.*

In addition to the reference in Ibn Baṭṭūṭa's account of his travels, we have another medieval Arabic reference to the cultivation and consumption of yam tubers. We owe this to al-ʿOmarī, who was very well informed about West Africa. This is what he writes in a passage dealing with the kingdom of Mālī:

> They cultivate a plant called al-qāfī; these are soft roots which they bury in the ground and leave there
> 278 until they turn hard.* They cultivate this plant in fields. If the king learns that it has been stolen, he orders the thief's head to be cut off; the head is hung at the spot where it was cut off. This is a custom transmitted from one generation to another; it does not allow of pardon, and any intercession against
> 279 it is in vain.*

Al-ʿOmarī, like Ibn Baṭṭūṭa, calls yam al-qāfī, which, ignoring the Arabic definite article al-, is a transcription of the Sudanic word kape, kappé or khabi. It is very interesting that in the fourteenth century, just as today, this plant was cultivated in fields and that its cultivation was associated with legal customs, possibly based on religious or magical foundations. The account is undoubtedly incomplete. Perhaps the author has simplified or confused information given to him by one of his informants. It is not impossible that the customs described, which point to the significance attributed to the cultivation of yam by the early Malinke, can be associated with the magical customs associated with the cultivation of yam among the Guinea Akan peoples, the Anyi and the Ashanti of the Twi group. These peoples practised agriculture before they invaded the tropical forest, and their existence was based on yam cultivation, the yam being closely connected with their social and religious life. Great annual yam festivals are still held by peoples ranging from the Ashanti to the Ibo in southern
280 Nigeria.* The Ashanti hold two annual festivals, one celebrating the planting of yam, the second its ripening. It is not until this second festival is terminated that yam may be consumed.

Formerly the festival of the yam-ripening was associated with the blood-sacrifice of a man. On the fifth day of the celebrations, a convict was offered as a messenger to the deceased king. It was only after this had been done that the reigning king, and all his subjects after him, could proceed to eat yam. The sacrifice and the sprinkling of water constituted the most important elements in the festival. The men destined for sacrifice were killed in the field, their blood flowing into a
281 hole from which the tuber of a new yam had just been extracted.*

I think the execution of a criminal (by beheading) in the yam-field on a king's order is an essential ingredient in the annual custom in the state of Mālī which is rather vaguely
282 described by al-ᶜOmarī.* The question of the existence of such an annual custom among the Mandingo peoples, presumably associated with fertility magic, and its connection with similar customs among the coastal peoples of the Gulf of Guinea, needs closer examination; but we have no space for this in our present work.

In conclusion, I may add that there are a great many varieties of yam, still included among the most essential plants cultivated by various peoples, including the Wolof in Senegal
283 and Gambia.* In some parts of Nigeria (e.g. among the pagan Katab people in Zaria province), cooked yam, called gwaza,
284 which can be eaten either hot or cold, is the only foodstuff.* Yam also plays a considerable part in Nupe, another province of Nigeria; there every farmer has two separate farms — one for
285 the cultivation of grain, and another for yams.* The Yoruba in southern Nigeria eat yam prepared in various ways, including a
286 yam porridge.* When we move further east, however, to Bornu, we
287 find that yam was quite a rarity.*

EARTH NUT (BAMBARA GROUNDNUT)

In the medieval Arabic sources we find references to a plant which botanists call Voandzeia subterranea, a species closely akin to leguminous plants (Vigna and Dolichos), the only difference being that its fruits (pods) develop below ground level. The plant, sometimes called earth nut or earth pea, or Bambara groundnut (so called after the Sudanic people of that name) comes from central Africa; in addition, it occurs in a semi-domesticated state in West Africa, where it has been

cultivated for centuries. Earth nuts are an essential element
288 in the food of the West African peoples.* That this was so in the Middle Ages is attested by the following passage in the account of his travels by Ibn Baṭṭūṭa, who saw the plant in 1352, during his journey from the town of Īwālātan (Walata) to Mālī, the capital of the Sudanic state of the same name:

> The natives extract from the ground a grain which looks like beans (fūl in Arabic); they roast it and eat it, the taste being like that of roasted chick-pea (ḥimmaṣ in Arabic). Sometimes they grind this grain to make a kind of round spongy dough which
289 they fry in ghartī (ghartē, gharite).*

Obviously there can be no doubt as to the identification of this plant as Voandzeia subterranea. This has already been noted by Mauny in his work on the useful cultivated plants of West Africa, where he quotes an abbreviated version of the text from
290 Ibn Baṭṭūṭa which we have just discussed.*

Earth nuts were consumed, according to Ibn Baṭṭūṭa's account, either roasted whole, or ground to flour from which sweet cakes were made. Roasted nuts were also eaten in nine-
291 teenth-century Bornu.* In Adamawa, as attested about the middle of the nineteenth century by Barth, they ate porridge made from
292 these nuts, with milk and rice added.*

LEGUMINOUS PLANTS

Along with the various species of millet, an important part was played in the food of the West African peoples in the Middle Ages by leguminous plants, and by kidney beans or cowpeas in particular.

Kidney beans

Even as early as 901, when the Arabic geographer Ibn al-Faqīh al-Hamadhānī was writing (and even then using earlier sources from the middle of the ninth century), he notes in his account of the land of Ghāna (on the borders of the present-day states of Mālī and Mauritania) that the food of the local population
293 consisted of millet and kidney beans (Arabic lūbiyā).* This refers to the species known to botanists as Vigna sinensis, which appears to have originated from central Africa, where it was presumably domesticated; from there it had already spread in remote times, reaching India and other tropical countries of the Old World. It also covers the species Dolichos lubia and
294 D. lablab. The species now known in Egypt as lūbiyā* appears in

West Africa as niébé (nebe). It should be distinguished from the
295 American bean, now so popular in the Old World.*

We find numerous references in the medieval Arabic authors to the cultivation and consumption of kidney beans or
296 cowpeas (lūbiyā) in various areas of West Africa.* Nothing is said, however about a number of other West African countries where kidney beans are now an important item of food and where they were undoubtedly in extensive use before the sixteenth century.

Starting from the west, kidney beans were cultivated, with millet and wheat, in the neighbourhood of the town of
297 Audaghast, in present-day southern Mauritania.* This information is contained in Yāqūt's geographical dictionary (early thirteenth century). But the reference itself belongs to a much earlier period, Yāqūt having borrowed it from the now lost geographical work by al-Muhallabī, the Kitāb al-ᶜAzīzī, written about the
298 end of the tenth century.* In the land of Ghāna, south-east of Audaghast, kidney beans were eaten, and in all probability
299 cultivated, as recorded by Ibn al-Faqīh al-Hamadhānī.* This information is corroborated by the Arabic geographer al-Qazwīnī (second half of the thirteenth century), who, however, applies it to the country known as Bilād at-Tibr ("land of gold dust"), the gold-bearing areas to the south of the state of Ghāna
300 proper, inhabited by the Mandingoes.* Kidney beans had been attested as one of the most essential foodstuffs of Ghāna, the "land of gold dust" half a century before al-Qazwīnī by Yāqūt, quoting, in a slightly altered form, the information recorded by
301 Ibn al-Faqīh al-Hamadhānī.* Ibn Baṭṭūṭa, during his journey in 1352 through the area between Iwālātan (Walata) and Mālī (the territory of the historic state of Ghāna), observed Negro women selling foodstuffs in the villages, including "bean flour"
302 (Arabic daqīq al-lūbiyā).*

The fact that kidney beans were cultivated in the
303 state of Mālī is also attested by al-ᶜOmarī.* It must be added that kidney beans have remained up to the present the favourite food of the Mandingoes (former Mālī territory), and are cultivated there together with millet, groundnuts, sweet
304 potatoes, cassava and yams (igname).* Further west, kidney

beans are cultivated nowadays by the Senegalese of Negro origin, under the name of niébé or seb, and play an important part in
305 the nourishment of the people.* Unfortunately we have no Arabic information about the cultivation of the plant in these territories.

Kidney beans are also now commonly cultivated in the territory inhabited by the Songhai, where they are known as
306 dunguri.* It is possible that this is what was meant by the Arab geographer az-Zuhrī (about the middle of the twelfth century) when he mentions a plant called in Arabic qiṭānī (plural from quṭnīya) which was grown on the banks of the Nile (meaning the Niger in this context) and used as food by the people of the
307 town of Kaukau or Gao.* The word, which really means leguminous plants, is also used to mean vetches, peas, lentils or kidney
308 beans.* We may add that the Bozo, a fishing tribe adjacent to the Songhai, who live on the banks of the Niger and Bani rivers (upstream of Timbuctu), have long been familiar with kidney
309 beans, which they call sapura.*

We have no information in the early-medieval Arabic sources about the cultivation and consumption of kidney beans in the territory of present-day Nigeria, where until recently it has been one of the main foodstuffs, and sometimes the most important foodstuff, as, for example, with the Katab people, between Bauchi and Kano, or in Bornu, where, according to Barth (who was there in the middle of the nineteenth century), kidney beans and beans constituted a third of the whole food of the
310 local people.*

On the other hand, in areas to the north and north-east of Lake Chad, (where the Zaghāwa were located by the late tenth-century Arab geographer al-Muhallabī, quoted above), the Zaghāwa, who had had relations with the state of Bornu,
311 cultivated chiefly millet and kidney beans.* It may be recorded here also that in the nineteenth century, before the French occupied these territories, kidney beans (lūbiyā) were
312 cultivated in Baele and Wadai as well as in Tibesti.*

Broad beans

Almost as important as kidney beans in the food of the West African peoples in the Middle Ages were broad beans (Vicia faba, Arabic fūl). This plant has been found wild in the Sersou region of western Algeria, which confirms Pliny's observation of the

presence of broad beans in the old province of Mauritania (in the western part of North Africa). It may be added that beans are cultivated in Morocco, where they are known under the Berber
313 name ibawen, derived from Latin faba.* Broad beans were also known and cultivated in ancient Egypt, where they have been
314 found in the tombs of the twelfth dynasty from 2400-2200 B.C.*

Presumably it was from these very countries — from Egypt or from North Africa (Algeria, Morrocco) that the cultivation of broad beans spread to West Africa. The thirteenth-century Arab geographer Ibn Sa^{c}īd, who was well informed about West Africa — presumably from Ibn Fāṭima (twelfth century), his main source of information about that area — reports that the
315 Nile (here: the Niger)* flowed across the western Sudan and then on to Egypt [!]. The banks of this river were inhabited by "many Negro peoples, whose number is known to God alone; they
316 cultivate broad beans [in Arabic, fūl]".*

From Ibn Sa^{c}īd's reference, which is a very general one, we can assume that the author, or his informant, includes the Lake Chad area where, according to Barth, broad beans were a foodstuff of great importance in the nineteenth century; for example, cooked beans were sold in the market at Kuka, the
317 capital of Bornu.*

Chick pea

Another leguminous plant used as food by the peoples of West Africa was the chick pea (Cicer arietinum, French: pois chiche), called by the Arabs ḥimmaṣ or ḥummuṣ. This plant, which is highly resistant to drought, was already known to the Egyptians in the early years of the Christian era; it is now cultivated mainly in Algeria, there the seed, of great nutritive value though difficult to digest, is an important foodstuff of the
318 Kabyles and Arabs.*

According to the geographical dictionary of Yāqūt, who is here repeating information found in Ibn al-Faqīh al-Hamadhānī, this plant, together with millet, was the chief foodstuff of the people of Ghāna and the "land of gold dust" to
319 the south, i.e. the tribal area of the Mandingoes.*

Is this information correct? It is hard to say. It must be borne in mind that in the original version in Ibn al-Faqīh, the principal foodstuff of the people of Ghāna, apart from millet, was not chick pea but kidney beans (Arabic lūbiyā).

So it is not impossible that Yāqūt altered the original source by substituting the word ḥimmaṣ (ḥummuṣ) — chick pea — for the word lūbiyā — kidney beans. On the other hand, it is also possible that in the early thirteenth century chick peas as well as kidney beans were cultivated and consumed in Ghāna; chick pea could have been brought there from North Africa by the early
320 medieval Moslem merchants.*

Lentil

It is quite possible (although we do not have any certain reference to prove it), that in at least some regions of West Africa, lentil (Ervum lens) was also cultivated. This plant was known and cultivated in ancient Egypt as early as 2200 B.C. In all probability this plant is implied under the Arabic name kirsanna or kirṣinna, the proper meaning of which is various
321 kinds of vetches and peas.* According to Abu ʾl-Fidāʾ, quoting an excerpt from the now-missing geographical work by al-Muhallabī (late tenth century) lentils were cultivated in the land of
322 Audaghast, in the southern part of present-day Mauritania.*

VEGETABLES

Mulūkhiyā

This plant is also known in Arabic by the name mulūkiyā; its botanical name is Corchorus olitorius. It comes originally from India; it has spread over the whole of south-western and part of western Asia, whence it came to Egypt and North Africa and to part of West Africa as well.

This is a vegetable, the leaves of which are used to
323 prepare a food which looks like spinach.* According to al-ᶜOmarī, who knew the plant from eastern Barbary (Ifrīqiya) — though it is not often cultivated there — it also grew in Mālī, in West
324 Africa, as a wild plant.* This information agrees with botanical information that some kinds of Corchorus olitorius have run wild, but continue to grow close to human settlements. Probably we should interpret al-ᶜOmarī's reference to the occurrence of the plant in Mālī in this way. In the neighbourhood of Libtako-Arabinda, south of the middle Niger, Barth saw a pool overgrown
325 with mulūkhiyā.* The same writer gives an account of the consumption of mulūkhiyā in Bagirmi, where it played a most
326 important part among the vegetables consumed.* According to Nachtigal, in Bornu, where mulūkhiyā was cultivated, it was

327 used to prepare sauces for adding to farinaceous foods.*
Nachtigal also gives an account of the cultivation and consump-
328 tion of mulūkhiyā in Tibesti.* It would seem that the plant was introduced to Mālī, Bornu and Bagirmi either from Egypt or from Morocco.

Onion

We also have some Arabic references to the cultivation of onion — Allium cepa (Arabic basal) in West Africa during the Middle Ages. According to recent botanical opinion, the onion came from the Mediterranean basin and from south Asia, and has long been cultivated in India, China and Egypt, where it is attested as long ago as the first dynasty, and where its importance in food was quite considerable (recorded by Herodotus, about 450 B.C.). At the present time it is cultivated in all tropical lands, being one of the most essential edible plants in the drier
329 tropical areas.*

Of all the information about onions found in the medieval Arabic authors, the most important is that given by al-Idrīsī (1154) relating to the West African countries included by him in the first section of the first iqlīm (zone) of the
330 inhabited part of the world.* This section comprised the most westerly part of the Sudan, and in particular the area occupied by the lands of Takrūr and Sillā in present-day Senegal. The people of these areas (the author emphasizes that he means townspeople) cultivated onions, cucumbers and water-melons as
331 well as millet, as their only edible plants.* Since al-Idrīsī gives the first place to onions, it seems that they must have played an important part in the food of the peoples of Senegal during the twelfth century. It may be mentioned that onions are still in use among the Senegalese Wolof, who know them under
332 names of their own, distinct from the Arabic word.*

In the fourteenth century, onions were also cultivated in the state of Mālī. We do not know for certain whether
333 al-ᶜOmarī, to whom we owe this information,* means the whole territory of the state of Mālī, or its capital only, where there was a quarter occupied by Muslim merchants of Berber and
334 Arab origin.* It is not impossible that onions were cultivated there mainly for that section of the population, of non-Sudanic origin. But it must be emphasized that in the middle of the nineteenth century, onions were popular both in Timbuctu and in

the near-by town of Kabara, not far from Mandingo country. This is attested by Barth, who visited both towns. According to him, onions were imported as a kind of preserved food from Sansandi (Sansanding) on the Niger, between present-day Segu and Timbuctu. The food was prepared at Sansandi as follows: a small variety of onion was cultivated, which was sliced, soaked in water and ground in a wooden mortar. The mass so produced was dried and mixed with butter to make round balls. These "onion balls" were called láwashi in the language of the Fulani and gabū in the
335 Songhai language.* Undoubtedly they must have been known to both these Sudanic peoples. It should be added, moreover, that one of the peoples of the Mandingo group, the Bozo, who live on the plain between the Niger and its tributary the Bani, though they are in the main a fishing people, do also cultivate some plants, including onions, which in their language have names
336 different from the Arabic name — yoboro and tien?.*

Onions were also known to the Tuareg (Berber)
337 Auelimmiden, neighbours of the Songhai, who called them takhfar.* The remarkable number of local names given to onions in the area of the Senegal and middle Niger (we have cited only a few examples) testifies to the long-standing and very widespread cultivation and consumption of onions in these areas. Barth also noted fresh onions at the market of the town of Say on the
338 Niger, in the former territory of the Songhai;* from there the cultivation of onions spread south-west to the Volta lands,
339 where they are cultivated to the present day.*

The fact that onions have been cultivated both widely and for a long time in the basin of the middle Niger, and to some extent also in the basins of the upper and lower Niger, is also attested by a passage in the description of Africa by Leo Africanus. He says that on the Niger there is excellent land for cultivation, where grain grows in abundance (here, probably, millet); he goes on to add that "pumpkins, cucumbers and onions
340 grow here in great profusion".*

There is no reference in the Arabic sources to the cultivation of onions in areas further east, more particularly in present-day Nigeria. It is hard to establish whether this omission is accidental, which is quite possible in view of the fragmentary character of the information, or whether this means that onions were not cultivated at all in these areas during

the Middle Ages. It must be remembered that Barth, whose name has often appeared in the course of this book, repeatedly reports that onions were both cultivated and consumed in Hausaland. For example, he says that onions were much cultivated at Kano, and that at the market in Wurno onions were the only cheap articles on sale. Moreover, at a place near Birni-n-Kebbi he saw large onions, brought from Gando (south-west of Sokoto). Near Sokoto, where onions were always cheap (and also widely cultivated) Barth even noticed an unusual dish made of cooked
341 onion seasoned with tamarind fruit, with butter added.* Thus it is most likely that the cultivation of onions in Hausaland dates back to very distant times.

It is hard to resolve the question whether onion cultivation came from the west, from the country of the Songhai, of the Mandingoes and from present-day Senegal, or from the east, from Egypt, where the onion is known as a vegetable of outstanding importance from the beginning of the country's history; indeed, we know of continuing relations which united West Africa with both Egypt and North Africa, where the onion
342 is also very popular.*

If we assume that the onion came to West Africa from Egypt, it could have come by way of the Tibesti area and the Lake Chad basin. We know of the cultivation of onions at Abeche in Wadai (where another plant related to it, garlic, popular in
343 ancient Egypt, was also cultivated),* and in Borkou, in the Lake Chad area, where onions seem to play a fairly important part in
344 the local food.* Onions were also cultivated at Ngigmi north of Lake Chad in the territory of the former state of Kānem, inhabited by the Kanembu (who were already professing Islam in
345 the eleventh century), as reported by Nachtigal.* On the other hand, in Bornu to the south-west of Lake Chad, the Negro population did not use onions, leaving them to the Arabs in their country, who ate them in large quantities. This information we owe to Barth, who reports that onions, the favourite dish of the Arabs, had been introduced there some hundred years before his arrival in Bornu, i.e. about the middle of the
346 eighteenth century.* I think this information relates only to
347 Bornu proper and the adjacent country of Bagirmi,* but not to Borkou or Kanem from which the cultivation of onions in all probability came to Bornu.

The probable route of the dissemination of the onion from Egypt must thus have gone through Wadai, Borkou, Kānem (with its capital at Ngigmi recorded already by the medieval Arab geographers) and through northern Nigeria towards the middle Niger and the Senegal basin. On this hypothesis, it is assumed that the appearance of onions in Hausaland was a result of trading with Egypt, just as this trade was responsible for ancient Egyptian imports penetrating to Nigeria. The medieval Nubians could have served as intermediaries; their cultural influences had reached the Lake Chad area through northern Darfur and Wadai between A.D. 800 and 1200, as attested by the archaeological sites at Koro Toro, latitude 16° North and
348 longitude 18°45' East, on the Bahr al-Ghazal.*

Mauny points also to the reference in Fernandes (1506-7), who speaks of the introduction of onions and garlic to S. Thome island; according to Fernandes, however, the local variety of onion was seedless, and seed had to be imported from
349 Portugal.*

Garlic

Garlic is a plant of central Asian origin. At an early date it appeared in the Mediterranean lands; in Africa it was first noted in Egypt, where, according to Herodotus, it was much in
350 use.* Among Arabic authors, al-ᶜOmarī alone records the cultivation of garlic (Arabic thūm) in Mālī during the first half of
351 the fourteenth century.* We have little information as to the present-day consumption of garlic by the Mandingoes in general, or by the Malinke in particular. On the other hand we know that
352 it is in use among the Senegalese.*

Cabbage

Cabbage (Brassica oleracea) was cultivated in Mālī in the fourteenth century. This is reported by al-ᶜOmarī, who states
353 that it occurred only rarely there.* It seems that the cultivation of cabbage came to Mālī from Morocco and Muslim Spain,
354 where, as the sources show, it had long been known.*

Aubergine (egg plant)

Among the plants cultivated during the first half of the fourteenth century in Kānem, a country to the north of Lake Chad, as well as in Mālī, al-ᶜOmarī records the aubergine —
355 Solanum melongena (Arabic badinjān).* Aubergines were known to the Arabs at a relatively early date; the botanist Ibn Bayṭār

356 mentions them as early as the thirteenth century.* I suppose
357 that this plant came to West Africa from the Fezzan,* shortly
before the fourteenth century, and was not very common. But I do
not suppose that its occurrence on the coast of the Gulf of
358 Guinea, where it has been attested by modern travellers,* can
have been prior to the arrival of the Portuguese on the coast.
Nowadays aubergines are cultivated and consumed by the Wolof
from Senegambia and many coastal peoples; they may have borrowed
359 the plant from the Europeans.*

Turnip

Finally, in the land of Mālī (or in the town only?) turnip
(Brassica rapa) was cultivated in the first half of the
360 fourteenth century, as reported by al-ᶜOmarī.* Assuming that
this information is correct, turnips were probably introduced
361 from Morocco, where there were two species.*

The fact that in Mālī plants as rare for West Africa as cabbage, turnip and aubergine were cultivated (which we know only from this one work by al-ᶜOmarī) may have been due to the existence of a separate quarter or trading settlement within the town of Mālī, for white Muslim merchants during the fourteenth century. Thus it is possible that it was only for these merchants, most of whom came from Morocco, that these vegetables
362 were cultivated.*

CUCURBITACEAE

It seems that quite an important part was played in the food of the West African peoples during the period we are concerned with, by pumpkins (frequently confused with gourds, cucumbers, melons and water-melons in the writings of the medieval Arabic authors). They served as a substitute for refreshing fruit, of which almost none was grown in these areas, though some wild fruit was commonly gathered.

Pumpkin

The pumpkin — Cucurbita pepo and Telfairia occidentalis, the qarᶜ of the medieval Arabic sources: according to H. G. Baker the latter is a "Sudanic" species, still at the present day restricted to West Africa. It is found wild as well as
363 cultivated.* Bois, writing of another species, Telfairia pedata Hooker, also states that it comes from West Africa. Recently it has been discovered also in Zanzibar and in various other parts

364 of East Africa.* This plant has large green fruits resembling our pumpkin in shape, 0.50 to 1 m long and 75 cm in diameter, their weight sometimes exceeding 25 kg. The pulp of this enormous
365 fruit is much sought-after by the local population.*

It seems that some medieval Arabic authors understood by qar^{c} the gourd or calabash Lagenaria vulgaris, which before the discovery of America in 1492 was already cultivated in both the Old World and in the New. So far as the Old World was concerned, according to most investigators, it was domesticated in the western Sudan, whence, in the course of the second millennium B.C. it penetrated to Egypt and also, in very remote
366 times, to India.*

Let us examine the information about pumpkins and gourds given by the medieval Arabic authors. According to al-Idrīsī (1154) this plant was cultivated in the westernmost part of the Sudan (the first section of the first iqlīm of the inhabited part of the world, corresponding to present-day
367 Senegal).* It must be added that the present-day Wolof, one of the principal Negro peoples in Senegal, cultivate and consume
368 both pumpkins and gourds.* Moving south-east from Senegal, pumpkins (gourds?) were cultivated (and evidently consumed) in the land of Mālī, as recorded in the geographical work of
369 al-^{c}Omarī (1342-9).* This information is quoted from al-^{c}Omarī by al-Qalqashandī, who adds that in Mālī pumpkins (gourds?)
370 occurred in great abundance.* Barth observed in Timbuctu, on the northern edge of the historic area of the state of Mālī, a species of pumpkin akin to Cucurbita melopepo, which was the
371 principal vegetable in the town.* This species also occurs in
372 Bornu, where it is called ságede or kubéwa.* According to information given by the geographer and traveller Leo Africanus (1526), excellent pumpkins (calabashes) also occurred in Gago
373 (Gao) on the Niger, the capital of the former Songhai state.* In another passage, he tells us that pumpkins grew in profusion in
374 areas of the Sudan which lie in the Niger basin.* Clearly the author means mainly the middle Niger basin, since his notions about its upper and lower course were extremely vague.

Finally, reference to the occurrence of pumpkins in the Sudan is also made by Ibn Sa^{c}īd, in a passage transmitted by
375 al-^{c}Omarī,* and concerns the land of Kānem. As recorded by Ibn Sa^{c}īd, pumpkins in this country were sometimes so large that

it was possible to make boats from them on which people could cross the Nile (here the Shari or Chàri river). We will pass over the question of pumpkins serving as boats (ferries) as not relevant to our subject.* In Adamawa, Barth saw a large variety of pumpkin called gunna, no doubt the same as the one referred to;* in Bornu proper, the cultivation of pumpkins was observed by Nachtigal.*

Cucumbers

Cucumbers — Cucumis sativus — are very popular all over the world; according to Cobley, they have been cultivated from a remote period in Africa and Asia, whence they are reputed to have come.* Unlike Cobley, other scholars assert that the cucumber, attested already in antiquity in Lower Egypt, came originally from central Africa.* Al-Bakrī (1068) reports that cucumbers (in Arabic maqāthī, singular muqthā) flourished at Audaghast on the borders of the Sahara.* Leo Africanus reports that the cultivation of cucumbers was common among the people of the (middle) Niger; in another passage he says that many cucumbers were to be seen at Gago (Gao).* Ibn Baṭṭūṭa, who stayed in Gao in 1353, reports that a very long variety of cucumber (faqqūṣ in Arabic) called ʿinānī was obtainable there.*

Melon

The next plant of this group whose occurrence in West Africa is recorded in the medieval Arabic sources is the melon — Cucumis melo (biṭṭīkh in Arabic). Al-Idrīsī includes biṭṭikh among the plants cultivated in the towns of the westernmost part of the Sudan, corresponding, as we have already said, to present-day Senegal.* In an area to the north of the lower Senegal, according to Fernandes (1506-7), edible melons grew, which were used by the Moors to quench thirst, and which resembled those called betakh (biṭṭīkh) in Egypt.* Fernandes' editors identify these melons as Citrullus vulgaris, the water melon.* According to Ibn Baṭṭūṭa, melons were cultivated in the shade of palm trees in Īwālātan (Walata), an extremely hot place on the southern borders of the western Sahara.* Barth saw various species of melon cultivated at Kabara on the Niger, east of Walata.* Following the course of the Niger further, melons grew in profusion at the town of Gago (Gao) — a piece of information provided by Leo Africanus.* They were also cultivated in the land of Katsina and on the way from Kano to Sokoto.*

Water-melon

The water-melon — Citrullus vulgaris: according to Cobley, this plant comes from Africa, where it has been cultivated for many centuries; it was from here that its cultivation reached India and other parts of Asia. In Africa the water-melon is served as dessert to quench thirst, while in the driest regions
391 of the continent it supplies water to men and beasts.* Scholars have repeatedly recorded the fact that water-melon was cultivated in Egypt from time immemorial (and spread from there to the Mediterranean lands) and that the wild variety grows in tropical
392 Africa.* The question of the domestication of the water-melon
393 in the western Sudan has recently been dealt with by H. G. Baker.* The only certain reference to the cultivation of water-melon in West Africa, comes from Ibn Baṭṭūṭa who ate it when on a visit to the vice-regent of a place on the Niger between Timbuctu and Gao. According to his account, the water-melon was known there
394 under the name biṭṭīkh al-akḥḍar (green melon).* Nowadays, the Songhai know two varieties of water-melon — the wild (molli)
395 and the cultivated (kankani).* The plant is known also to other peoples of the upper and middle Niger and the adjacent lands,
396 including the Wolof, Mandingo, Hausa, Auelimmiden-Tuareg, Bozo* and other peoples. Within the Sudanic border-zone called the Sahel, near Nioro, to the west of Timbuctu, and within the territory of the historic state of Ghāna, the wild species of water-melon (Citrullus) grows, producing fruit of enormous
397 size.*

FRUIT

The information given by medieval Arabic authors about the
398 consumption of fruit,* from wild or planted trees, by the peoples of West Africa is somewhat contradictory. According to some Arabic authors there was a complete absence of such fruit in the western Sudan. For example, al-Idrīsī asserts that in Negroland (meaning the countries in the Senegal and Niger basins) he did not see any fruit, fresh or dried, except some dates from the Maghrib brought from Sijilmāsa and Zāb by
399 merchants who were natives of Warjlān (Wargla).* The same statement is repeated some four centuries later by Leo Africanus, who says that in countries of the Sudan extending
400 over the Niger there was no fruit except goro (the kola nut).*

The same writer also says that there were no fruit trees at all
401,402 in the province of Ghinea (Jenne),* or in Tombuto (Timbuctu),*
403 or in Gago (Gao).*

On the other hand quite a number of sources mention the collecting, cultivation, importation and consumption of various kinds of fruit in the western Sudan during the Middle Ages. The most noteworthy of these is the information given by the Arab geographer al-Iṣṭakhrī (951, but probably based on older sources from the beginning of the tenth century) about the Sudanic people eating fruit unknown in Muslim countries. He also says that in the hill regions of the Sudan various fruits known in Arab lands could be found, though they were not
404 eaten there.* Leo Africanus, though he was so definite about the absence of fruit on the Niger, admitted that fruit grew in the northern, cooler part of the land of Zegzeg, in present-day
405 Nigeria.* Al-ᶜOmarī (1342-9) records the presence of many kinds of fruit trees in the Berber kingdoms of Audaghast, Tadmekka
406 and Air (in the Sahara-Sudan borderlands)* as well as in the land of Mālī, where they played an important part in the
407 nourishment of the Negroes, providing "food for the majority".* At Kānem (also implying Bornu) there was great abundance of various fruit known from the Muslim countries, as well as some local kinds; this is stated by Abu ʾl-Fidāʾ, who relies on
408 earlier information given by Ibn Saᶜīd.* Similarly, Ibn Baṭṭūṭa, describing the country between the towns of Īwālātan and Mālī, says that trees grew there which produced fruit like plums,
409 apples, peaches and apricots, but of different species.*

In addition to these general references, there is also information of a more specific nature. From this it is known that the people of the western Sudan and the adjacent lands of the southern Sahara gathered, cultivated, imported or consumed several kinds of fruit — the fruits of tamarind, akee-apple, baobab, wild plum (?), hājlīj, dum plam, jujube, sycomore, fig, pomegranate, peach, lemon and orange trees, as well as dates and grapes.

Tamarind

The tamarind (Arabic tamr hindī), according to ethno-botanists, is one of the two species of fruit trees native to West Africa. This is a large tree producing a pod-like fruit containing from one to eight seeds surrounded by a thick black sweet-sour pulp,

which is nowadays either eaten raw for refreshment, or made into jam, or sherbet, or pressed into cakes. This foodstuff is in great esteem among Arabs and Hindus. It also has some medicinal properties (as a laxative).* I think that tamarind is the same as the fruit which al-ᶜOmarī calls zbīzūr; this tree, so he reports "produces fruit resembling the pods of carob-bean [Arabic kharrūba], from which comes starch like that obtained from lupin, sweet and pleasant to the taste; each fruit has one stone". Al-ᶜOmarī classifies zbīzūr among the fruit trees which grew in the land of Mālī in the western Sudan.* Tamarind fruit is still eaten by the Mandingoes.* Roberty has observed wild tamarind trees near Nioro, on the northern edge of the former state of Mālī;* they also grow in other areas in the northern Sudan, e.g. in Senegambia, where the fruit is also eaten by the Wolof,* and in Gao;* moreover, they are known to the Tuareg Auelimmiden (north-east of Gao) who call tamarind trees and fruit busúsu (cf. the "Sudanic" name for tamarind, recorded in the Arabic treatise Tuḥfat al-aḥbāb: bū ṣūṣū);* they are also known in areas of present-day Nigeria, including the provinces of Ilorin* and Bornu* as well as in Baele* and Bagirmi, where Barth praises the fruit's refreshing and cooling properties.*

Akee-apple

Another fruit tree growing wild in West Africa, and attested by the medieval Arabic authors, is the akee-apple (Blighia sapida or Akeesia africana) which, like the tamarind, comes originally from tropical Africa, presumably from western Africa.* I identify this plant with the qūmī tree, listed by al-ᶜOmarī among fruit trees growing wild in Mālī. The fruit of this tree, as reported by al-ᶜOmarī, was "similar to a quince in appearance, in taste to bananas, and it has a stone like gristle, which some people eat with the fruit".* This description can be applied to the akee-apple with a fair degree of accuracy; it has a triangular capsule, with pulp of a nutty taste, as described by botanists, eaten raw or fried.* Dozy identifies qūmī with the plant called Tragopogon, known from Morocco and Algeria; but this is clearly a misunderstanding.*

Baobab

An important fruit tree in West Africa is the baobab (Adansonia digitata).* The people nowadays eat not only the fruit itself but baobab leaves as well, these being much in demand as a

component of sauces served with various kinds of porridge.* The baobab fruit, of farinaceous consistency and a rather sweet though also wine-like flavour, is popular among the Negroes. The earliest Arabic reference to the baobab and its fruit is made by al-Bakrī (1068). He says that at six days' journey from the historic town of Ghāna, in the province of Ṭāqa, there was a quite common tree called tādmūt, the fruit of which was like melons (al-baṭṭīkh) filled with a sweet and sharp tasting substance which looked like sugar (qand in Arabic) and which was used as a drug to cure fever.* The name cited by al-Bakrī is related to the present name of the baobab in the language of the Berber tribe of the Zenaga (living in southern Mauritania): tadaumit (plural tedumit).*

Roberty, drawing up an inventory of the wild plants of the Nioro region, in the territory of the historic Ghāna, includes among them the mealy fruit of the baobab tree, used as food.* Al-ᶜOmarī lists baobab among the wild fruit trees growing in Mālī. According to him, baobab fruit, which he, like al-Bakrī, calls tādmūt, contained a very palatable starch which was also used as food.* Ibn Baṭṭūṭa also mentions a tree producing fruit resembling the melon (Arabic al-faqqūs, meaning also "cucumber"), with a mealy pulp which was cooked and put on sale in the market-place. This tree, which must certainly be identified with the baobab, grew, according to Ibn Baṭṭūṭa, in the area between the towns of Īwālātan (Walata) and Mālī.* To the present day, the Mandingoes (among whom we must include the former people of Mālī) consider baobab to be a food.* Among the foodstuffs now used by the Bozo, a fishing people living on the Niger and Bani rivers who also belong to the Mandingo group, we also find karinʾ du, baobab starch.*

Another description of the baobab tree and its fruit (which is omitted here, as it is based on al-Bakrī's account) is given by ad-Dimashqī.* We may add that baobab fruit and leaves are used as food by the Wolof of Senegambia,* by the peoples of Nigeria,* by the inhabitants of Bornu* and Bagirmi,* and other West African peoples. Nachtigal, though he praises the refreshing qualities of the baobab fruit, says that it was not of high food value.*

Plums

Ibn Baṭṭūṭa mentions, among the wild fruit trees he observed in

the area between Īwālātan (Walata) and Mālī, some trees with
440 fruit resembling plums.* Possibly he means a variety of wild
441 plum, bírgim, which Barth was to notice in Bornu.* This is not improbable, though I do not know whether these trees also grow
442 in the most westerly parts of the Sudan.*

It is also possible that Ibn Baṭṭūṭa is referring to the fruit of a small thorny tree called hajlīj (Balanites aegyptiaca, "desert date"). The tree produces large egg-shaped fruits with sweet, slightly sharp-tasting pulp, used as food
443 both for people and for cattle.* The leaves of this tree are used as food in many Sudanic regions; they are a common ingredient in sauces. These trees and their fruit are described by Fernandes (1506-10); he adds that the fruits were usually
444 eaten after drying, when they became sweet.* The fruit of hajlīj is also used by other peoples of the Sudan, from the
445 Senegalese Wolof* to the peoples of the Lake Chad basin, of
446 Wadai and of Tibesti.* Fernandes adds that the trees grew in
447 southern Mauritania.*

Dum palm

Another West African tree which grows wild and produces edible
448 fruit is the dum palm (Hyphaene thebaica).* The only Arabic reference to this tree we owe to al-Muhallabī, who, in a passage of his geographical work quoted by Abu ʾl-Fidāʾ, enumerates the dum palm with other trees growing in the province of Audaghast,
449 under the Arabic name muql.* Al-Muhallabī does not mention the fruit of the dum palm, nor does he say whether it was used as food by the people of Audaghast; but we know that the fruit has been, and still is, popular all over the Sudan as well as
450 in large parts of the Sahara.* The pulp of dum-palm fruit, which is not very thick and of a very fibrous consistency, is eaten either raw or as a flavouring for various dishes, in such places as the Teda-Daza lands, from Tibesti to Ennedi, Bornu,
451 Hausaland, at the town of Say on the middle Niger, etc.*

Jujube

Among the fruit of wild trees, we must also include the jujube (Ziziphus jujuba or Z. mauritiana; another species: Z. spina-
452 Christi), called in Arabic nabq, nabiq or nabaq.* Ibn Baṭṭūṭa (fourteenth century) reports that in Negro villages on the way from Īwālātan (Walata) to Mālī, among other foodstuffs for sale
453 was "jujube flour" (Arabic daqīq an-nabaq).* Not far away, in

the Nioro region, there are two species of the tree, Z. mauritiana jujube proper, a wild tree with edible fruit, and Z. spina-Christi, in Arabic kurna, a tree of North African origin, gradually replacing the jujube in the Sudan, and also producing
454 edible fruit.* The jujube flour described by Ibn Baṭṭūṭa may be dough made from the fresh jujube fruit (or perhaps from the fruit of Z. spina-Christi ?). This is attested by at-Tūnsī, the Arab traveller who visited Wadai and Darfur in the nineteenth century. The tree is called nabk-el-karnau. After the stones have been removed the fruit of this tree is ground to a form of
455 dough used as food and also for medicinal purposes.*

456 Jujube fruit is used as food both in Senegal* and in Bornu (known there as kurna or korna), where it is used to prepare a bread-like dough which tastes like gingerbread — the same as that made on the route from Walata to Mālī in the
457 fourteenth century.* Nachtigal mentions the fruit of nabaq (jujube) as well as kurna (Z. spina-Christi), a tree related to jujube; the fruit, he says, was eaten by the people of the
458 countries north of Lake Chad.* In North Africa the jujube was a tree cultivated in gardens. Al-Bakrī, for example, praises "the delicately-flavoured jujube fruit, as large as nuts from
459 Tunis".*

Sycomore

Another fruit tree growing in the western Sudan was the sycomore, in Arabic jummaiz, which, according to al-ᶜOmarī, was
460 cultivated in the gardens of the land of Mālī.* He clearly means Ficus sycomorus, a tree producing fruit like figs, juicy and sweet. This tree was already known in Egypt in Pharaonic
461 times.* Barth records sycomore trees growing in the orchards of
462 the town of Gao,* and Nachtigal reports that the fruit of this tree was not unimportant as a foodstuff with the population of
463 Bornu.*

Figs

464 Al-Muhallabī (975-96), in a passage quoted by Abu ʾl-Fidāʾ,* says that in the province of Audaghast, the only fruit trees were figs (tīn in Arabic) — Ficus carica. This is confirmed by al-Bakrī (1068), who adds that there were only a few fig trees
465 at Audaghast, and those were small.* According to al-ᶜOmarī, fig trees also grew in the land of Kānem, a name which was
466 extended by the medieval Arabic authors to cover Bornu as well.*

The same information is again given by al-Maqrīzī (early fifteenth century).

Fig trees grow semi-wild in North Africa. They were known already to the ancient Egyptians.* According to European travellers of the nineteenth century and to present-day scholars, fig trees are also found in the western Sudan. The fig tree grows wild in Senegambia;* near Nioro, where the occurrence of wild figs has been attested;* on the Niger between Timbuctu and Gao;* near Katsina in Hausaland, where the tree was presumably cultivated;* and in Bornu, where, according to Barth, there were fine fig trees,* while according to Nachtigal's account, the fruit of wild fig trees played some part as a foodstuff for the native population.* Mauny believes that the cultivation of fig trees was brought south from North Africa by the Arabs.*

Pomegranate

At the town of Ney in Kānem, 40 Arab miles from Jīmī (now Ngigmi) the ancient capital of the country, according to Abu ʾl-Fidāʾ, who is quoting a passage from Ibn Saʿīd's work, there grew pomegranate trees (rummān in Arabic) — Punica granatum.* The occurrence of pomegranate trees in Kānem is also attested by al-Qalqashandī.* It seems that the cultivation of pomegranate trees reached Kānem either from Egypt, where they had been known since the eighteenth dynasty,* or from Tunisia, where they are still much cultivated at Gabes and in the province of Jarīd;* in fact, they were already widely cultivated by the Carthaginians,* and also in the Middle Ages: see, for example, the information given by al-Bakrī about the delicately flavoured pomegranates at the town of Tunis.*

Peach

The peach, a tree of east Asiatic origin, was known in antiquity in Egypt and on the island of Rhodes, and at the beginning of our era in Italy;* according to the Arabic geographer Ibn Saʿīd (quoted by Abu ʾl-Fidāʾ), peaches grew also in Kānem at Ney, a town 40 Arab miles (about 80 km) from Jīmī (Ngigmi).* This information about the cultivation of peaches in Kānem is repeated by al-Qalqashandī.*

Lemon

In the land of Kānem (present-day Kanem and Bornu), lemon trees (Citrus limon, C. medica) also grew, a fact attested in the

484 geographical works of al-ᶜOmarī and al-Qalqashandī.* This
information is corroborated by Nachtigal, who observed the
485 cultivation of lemon trees at Kuka, capital of Bornu.* The
cultivation of the lemon, in all probability, came from the
Mediterranean coast, where the tree had been cultivated during
486 the Roman regime.* Possibly it came via Tunisia (where its
487 cultivation is attested by al-Bakrī),* and Tripolitania,
including the Fezzan, as in the nineteenth century, isolated
488 lemon trees were recorded growing in Murzuk.* On the other hand,
489 it must be remembered that lemon trees grew also in Nubia,*
where their cultivation was probably derived from Egypt; so it
is not impossible that it was from this country that lemon
cultivation reached the Lake Chad area, which maintained close
cultural relations with Nubia in the Middle Ages. Darfur and
Wadai, where Nachtigal observed the people cultivating lemon
490 trees, could have been the intermediate stages.*

Leo Africanus (1528) mentions wild lemon trees in the
491 Hausa province of Cano (Kano).* This wild type was known in
Hausaland at a much later date, as is testified by Barth, who
observed a lemon tree laden with fruit in the neighbourhood of
492 the town of Sokoto.* The Portuguese traveller Diego Gomes found
493 lemon trees growing in Senegambia in 1456.*

Oranges

As well as lemon trees there were also wild orange trees in the wooded hills of the Hausa province of Kano. The only information on this subject comes from Leo Africanus, who notes that the taste of the wild oranges (and wild lemons) was not very diff-
494 erent from that of the cultivated varieties.* In my opinion he is referring to trees (run wild) of the bitter orange (French bigaradier, Bot. Citrus vulgaris), a species originally from the Far East, cultivated in India since the second century A.D., whence it was transmitted during the ninth and tenth centuries
495 to Asia minor and to Egypt.* The wild orange is also known at
496 the present day in Morocco.* According to Ibn Ḥauqal, it grew in the land of Sūs, more specifically in southern Sūs, in the tenth century. It was also cultivated in Sicily in the early eleventh century, and the Portuguese found it in 1498 on the
497 East African coast.* Undoubtedly it was this species of orange, not the sweet orange which was introduced at a very late date to North Africa, which al-Bakrī had in mind when reporting the

498 cultivation of fine oranges at Tozeur in southern Tunisia.*

I think that the cultivation of orange trees penetrated to Kano from Egypt, or possibly from Tunisia or Morocco, between the tenth and the fifteenth centuries; in course of time cultivation was neglected, and the trees ran wild,
499 and were observed in this state by Leo Africanus.*

Dates

Dates (Phoenix dactylifera) were of much more importance in West Africa than all these other fruits from cultivated and wild trees. Dates were cultivated in the northern areas of the Sudan and in the Sahara, or imported from North Africa. They probably came originally from India or the Persian Gulf region, and were cultivated in Egypt as much as 5,000 years ago. From Egypt they moved westward, to the Sahara. Herodotus (IV, 172, 182, 183) mentions date palms growing in large numbers in the fifth century B.C. in the Augila oasis and in the Fezzan. Moreover, date stones have been found in the tomb of Queen Tin Hinan (fourth century A.D.) at Abalessa (in Hoggar). But it was only after North Africa had been conquered by the Arabs, and Muslim commercial centres were formed south of the Sahara that the cultivation of date palms and the consumption of dates in these
500 areas became common.*

At the time when al-Bakrī was writing (1068) the cultivation of date palms played an important part in Jabal Lamtūna, a mountain massif known today as the Adrar mountains in Mauritania. According to his account, the capital of this
501 country was surrounded by a grove of nearly 20,000 date palms.* Leo Africanus, who travelled through the same country in about 1512 at the latest, reports that at Guaden (Wadan, Ouadane),
502 then the capital of Adrar, only a few date palms grew.*

A large number of dates was also produced in Audaghast. According to Yāqūt, quoting a passage from the now-missing work by al-Muhallabī (975-96) date palms grew in abund-
503 ance in this country.* This information is repeated after
504 al-Muhallabī by the geographer Abu ʾl-Fidāʾ.* Several decades later, al-Bakrī refers in two passages to "date palm gardens"
505 extending round the town of Audaghast.* Ad-Dimashqī repeats
506 this information, quoting al-Bakrī.*

Further east, in Īwālātan (Walata), Ibn Baṭṭūṭa
507 observed only a few small date palms in 1352.* A hundred and

fifty years later, Leo Africanus found several date gardens surrounding the three villages and separate huts which made up
508 the oasis which Leo calls Gualata.* It is interesting to note that in the Nioro region to the south of Audaghast, isolated date palms still grow near the villages, but they produce fruit
509 of only mediocre flavour.* These may be the very same former date gardens, now deserted.

In the medieval Arabic sources there is no mention of the possible occurrence of the date palm in the territory of the Songhai state or in Hausaland; but, about the middle of the nineteenth century, Barth observed whole orchards of these
510,511 trees at Gago* and near Sokoto.* There were numerous date palms at the beginning of the nineteenth century at Katungwa, a place
512 between Bornu and Kano.* The town of Kano itself was also
513 surrounded at that time by a great number of date trees.* Moreover, al-ᶜOmarī mentions fresh dates in the land of Kānem
514 (embracing also Bornu).* Ad-Dimashqī describes the town of Kūlad
515 in Kānem as lying in a valley abounding in date palms.* In modern times these trees still grew in Kānem; Barth observed
516 them at Ngégimi (Ngigmi, formerly Jīmī),* while Nachtigal mentions the sale of dates in the streets of Kuka, then the capital
517 of Bornu.* Dates were probably also imported to Kānem and Bornu from the Kawār oases, where palm orchards are already mentioned
518,519 by al-Idrīsī (1154),* and then by Yāqūt (thirteenth century),* and where Barth later saw them, and remarked on their mediocre
520 quality.* According to Nachtigal, dates were an important com-
521 ponent in the food of the people of Kāwār.* In the Chad area we must also place the Negro people of Barkāmī (Borkāmā), who, according to Ibn Saᶜīd, lived in valleys overgrown with date palms between Kānem, Nubia and the land of the Zaghāwa (between
522 Wadai and Darfur).* According to Marquart, he is referring to
523 the former inhabitants of the Bahr al-Ghazal region;* but it is also possible that Ibn Saᶜīd may have meant the people of Borkou, where, until recent times, dates have played quite an important part in the food of the native population, as well as being an
524 important item of export.* Al-Maqrīzī, who misspells the name of this people Tukāma, placing them near the lands inhabited by the Taju tribe (the present-day Daju, Dajo, in Wadai), also
525 mentions date-palm groves in the land they occupied.*

We also have some information about the importation

of dates into West African countries and the adjacent areas of the Sahara. For example, al-Idrīsī reports that dates were imported from Sijilmāsa and from the land of Zāb in Algeria to the westernmost part of the Sudan, corresponding to the
526 present Senegal.* The fruit was brought by merchants from Wargla. The fruit was also brought to the land of Ghinea (Jenne), as we know from a passage in Leo Africanus, from the Gualata (Walata) oasis and the oases of the southern Sahara, or as Leo calls it,
527 Numidia.* According to Ibn Baṭṭūṭa, dates were brought from Sijilmāsa and the adjacent Darᶜa oasis to the settlement at the
528 salt-mines at Taghāza in present-day Mali.*

Finally, dates, in all probability imported, were also to be found among the Berber tribe of Zanaga (Zenaga) in southern Mauritania. Leo Africanus, to whom we owe this information, asserts that dates were reserved for guests (presumably North
529 African merchants).* We may add that dates from the Moroccan Sahara enjoyed special popularity among the Arabs, and probably also among the Sudanic peoples.

Grapes

Grapes were of much less significance in the food of the West African peoples than dates. We have only two Arabic references to the growing of grapes there. The first, which we owe to
530 al-Bakrī,* mentions the small vineyards at Audaghast, a town inhabited by a mixed population, of whom an important part consisted of immigrants from North Africa, of Berber and Arab origin, in the early medieval period. Perhaps it was these immigrants who introduced the cultivation of grape vines into Audaghast; since Punic and Roman times vine culture has been, and still is, widespread in North Africa. In this case it is quite likely that the vines cultivated at Audaghast were of the Vitis vinifera species, which occurs wild in Algeria and Morocco, and has been cultivated for several thousand years in Egypt. On the other hand it is not impossible that the vines cultivated at Audaghast were Ampelocissus Chantinii, known in Senegal, with watery grapes of indifferent flavour, neither
531 sweet nor acid.*

According to al-ᶜOmarī (1343-9) grape vines were also cultivated in the land of Kānem, in the Lake Chad area. Here also, the author may have been referring to Vitis vinifera, the cultivation of which could have come to Kānem from Nubia, where

vine culture is attested in a passage in Yāqūt. On the other hand it is not impossible that the vine cultivated in Kānem was Ampelocissus Bakeri, which grows wild in the Niger basin, in
532 Senegal, Guinea and Ethiopia, with edible grapes.*

As well as grapes cultivated in the Sudan, the people of West Africa, and of Audaghast in particular, ate dried grapes brought from "Muslim lands" i.e. from North Africa. This
533 information is given by al-Bakrī.* It is possible that these grapes were brought from Sijilmāsa, where the same geographer
534 notes the cultivation of vines,* or from Fez, which is still an
535 important trade centre for this fruit.*

This information given by the medieval Arabic authors about the collection, cultivation or importation of fruit in West Africa, and its consumption, is obviously quite haphazard and fragmentary in character. It is certain that these various kinds of fruit occurred not only in the West African countries mentioned by the sources, but in other countries as well. Moreover, there are good grounds for supposing that not every kind of fruit eaten during the Middle Ages in West Africa was recorded by the Arab geographers and travellers.

TRUFFLES (Arabic kamʾa, Berber terfās)

The people of the Sahara also collected truffles for food. This is already recorded by al-Idrīsī, who states that in the lands adjacent to the town of Audaghast, near stagnant waters, there grew truffles (kamʾa in Arabic) that sometimes weighed as much
536 as three pounds (riṭl in Arabic).* These fungi were brought to Audaghast, where the people cooked them together with camel meat. They asserted — quite rightly, al-Idrīsī adds — that
537 there was no better food than this on earth.* Al-Bakrī, who wrote a little earlier than al-Idrīsī, mentions enormous truffles (kamʾa in Arabic) eaten by the inhabitants of the Ghadames oasis in Tripolitania. According to him, these truffles were so large that sometimes rabbits dug their burrows
538 inside.* Ibn Baṭṭūṭa also mentions the great abundance of these fungi (which he also calls by the Arabic name kamʾa) in the
539 desert to the north of the oasis of Īwālātan (Walata).* Probably both al-Idrīsī and al-Bakrī, as well as Ibn Baṭṭūṭa, are referring to the kind of truffle which Leo Africanus was to call terfez. According to Leo Africanus, terfez was similar to

truffle, but considerably larger, some specimens reaching the size of oranges. They grew in the "Numidian Desert" (i.e. in the Sahara) in the sand. According to this author, they were the favourite dish of the local Arabs, who ate truffles boiled in milk or in water. Leo Africanus also mentions that truffles were sometimes peeled and roasted on coals, and then cooked in a fat broth. He goes on to say that this particular kind of fungus had restorative qualities, and that physicians knew it under
540 the name of camhe;* this is a deformation of the Arabic work kam³a. The name terfez itself (proper form terfās) is of Berber origin. According to Lhote, this is a kind of white truffle known to botanists as Terfezia, of pleasant taste, though less aromatic than the black variety. The plant is found throughout the northern Sahara, growing also at Ahaggar. Nowadays, the people of these countries usually eat white truffles boiled in
541 water and seasoned with olive oil and vinegar, or roasted.*

MANNA

Among the foodstuffs of vegetable origin eaten by the inhabitants of West Africa was "manna". According to Leo Africanus this was found in large quantities near the town of Agadez
542 (Agades).* People used to collect it in the morning in gourds, and it was then sold fresh in the streets of the town. A gourd holding about two litres (3½ pints) was sold, as evaluated in the currency of that time, at 15 gold centimes. Manna mixed with water gave a delicious drink. It was also added as an ingredient to soup. According to Leo, the product had restorative and curative properties.

We do not know, unfortunately, just what is meant by the word "manna" used by this geographer. Could it be the manna known for its laxative properties produced by the plant hāj (Alhaji Maurorum), known in Persia under the name ter-enjebin, "honey dew"? We know that this plant, a small thorny tree, produces a sweet liquid which coagulates when exposed to the air. The product is collected in Persia and imported into
543 Bombay.* I do not know whether this plant grew near Agades; but the German traveller Nachtigal noted it at Kawār and in Borku,
544 east of Agades.* However, this product is not found in the
545 market at Agades at the present day.* It is also not impossible that Leo Africanus's "manna" was the same as a kind of gum

which was sometimes used, along with milk, as the only food of the Moors living as nomads to the north of the lower Senegal, as we are informed by the French naturalist Adanson in his account
546 of his travels; he visited these lands about 1750.* The subject, however, calls for further examination.

Al-Bakrī reports that manna of some kind was collected
547 at Tozeur in southern Tunisia.*

3: MEAT AND FISH

DOMESTICATED MEAT ANIMALS

By comparison with food of vegetable origin, meat played only a minor part in the nourishment of the West African peoples during the Middle Ages. It is probable that many tribes ate meat only to celebrate some religious rite or on some equally solemn occasion.* This does not refer, of course, to the wealthy tribal chiefs and notables who had meat rather more frequently. The striking deficiency of meat in the daily fare of the population can be demonstrated by the fact that they ate carrion, a fact which shocked the authors of the medieval Arabic sources, as we shall see. But there were exceptions. With some tribes, both game and the meat of domestic animals seem to have occupied quite an important part in the nourishment of the people. This also applies to fish, turtles, etc. which played a very large part in the food of peoples who were not so strictly dependent on agriculture, as is still the case with many West African peoples whose economy is based more on hunting, fishing and food gathering than on agriculture. In general, we can say that agriculturalists ate vegetable food almost exclusively, pastoralists ate much more meat, while the hunting and fishing peoples, who constituted a small minority of the West African population, ate meat and fish as their basic food.

In the medieval Arabic sources we can find fairly abundant information about the consumption of meat, fish, etc., by African peoples in the Middle Ages. There are also numerous references to the rearing of domestic meat-producing animals, as well as to hunting. Information of this kind, though not relating directly to food, may be considered as an indirect source of information on the history of the food eaten by these peoples.

Let us start with a review of references of a general nature to the part played by the keeping of cattle and poultry in the West African economy, and to the consumption of meat from these animals. Most noteworthy is an important statement by Leo Africanus (early sixteenth century), that all the countries near the Niger, that is virtually all West Africa known

to him, provided "excellent land for cultivation where corn grows in great abundance, and the quantity of cattle is innumerable".* I think this information must be understood to mean that the pastoralists inhabiting areas on the Niger kept many domestic animals, just as, for example, the Songhai and Hausa peoples do at present.*

Going from west to east, we must first quote a reference to cattle-rearing by the tribes (presumably of Sudanic and Berber origin) living in the Ayūnī peninsula, near the estuary of the Senegal river, which we owe to the well-known Arab geographer al-Bakrī (1068).* In the fourteenth century, meat and millet were the basic food of the people of the town of Audaghast (in southern Mauritania, inhabited by the Berber Lamtuna, Tāzūkāght, Massūfa, Kākdam and Juddāla), as we learn from ad-Dimashqī* and al-ᶜOmarī,* the latter adding that the inhabitants had only a scanty supply of corn. On the other hand, at Gualata (Walata), further east on the southern border of the Sahara, there was great deficiency of meat, as we know from Leo Africanus, who visited it in about 1512 at the latest.* At the same time, further south, at the centre of the former state of Mālī at Ghinea (Jenne), he also observed a very great profusion of cattle.* The existence of cattle in Mālī is attested also by al-ᶜOmarī, who reported that cattle were fed on millet.*

Further north-east, at Cabra (Kabara) near Timbuctu, according to Leo Africanus, the local people did not lack meat. This author goes so far as to stress the bad effect on the health of the people of a dish (or dishes) consisting of fish, milk, butter and meat.* The Berber Maddāsa tribe, nomadizing near the banks of the middle Niger, ten days' journey from the town of Gao, owned herds of cattle which, according to Yāqūt, were their only riches.* It is Yāqūt, too, who records the presence of herds of cattle at Kūkū (or Kaukau, now Gao), the capital of the Sudanic Songhai people.* This is corroborated by Leo Africanus, who states that at Gago (Gao) there was exceptional abundance of bread (presumably millet) and meat. This same geographer goes on to say that in other parts of the kingdom of Songhai, pastoralists lived alongside agriculturalists.*

Al-Bakrī reports that at the town of Tadmekka, capital of the small Berber kingdom of the same name, the inhabitants fed mostly on meat, milk, and a kind of grain produced by the

soil without cultivation.* The same information is repeated by Waṭwāṭ (d. 1318)* as well as by ad-Dimashqī (first half of the fourteenth century).* Another Arab author of this period, al-ᶜOmarī, also reports that the inhabitants of Tadmekka fed mostly on meat and milk, consuming grain only in small amounts; he says the same of the Berber population of the Air sultanate, to the east of Tadmekka.* Meat was also the main source of food in the small Berber state of Takadda, near Aïr, as we know from a passage in the account of his travels by Ibn Baṭṭūṭa, who passed through this state in 1353.* In the sixteenth century, the territories of Aïr and Takadda were incorporated into the Berber (Tuareg) sultanate of Agâdes whose population was mostly pastoral, as we know from Leo Africanus's account.* Cattle-rearing, and the resulting consumption of meat, in the adjacent area of Hausaland and Bornu are attested in further passages in this author's work which we will discuss elsewhere because of their more specific character.

Cattle

We will now turn to more detailed information and begin by analysing sources concerned with the rearing of cattle.*

According to al-Bakrī, the people of the town of Sillā near the river Senegal, south-east of the country of Takrūr, kept many cows.* Sillā was the capital of a kingdom of the same name which extended from Takrūr to the western borders of the kingdom of Ghāna. To this day, the rearing of cattle plays an important role in the economy of the agricultural peoples of Senegal,* and beef is a favourite food even among the fishing people of Guet N'Dar belonging to the Wolof tribe.*

Further east, al-Bakrī notes numerous herds of cows in the country of Malal (i.e. Mālī),* the centre of which at that date lay west of the upper Niger between Bamako and Jeriba, and which was inhabited by the Mande (Mandingo) people Al-Bakrī stresses also the importance of cows as sacrificial offerings in pre-Islamic times in Mālī. This custom persists to this day among some non-Muslim Mandingo-speaking peoples.* Al-ᶜOmarī also notes well-developed cattle husbandry in Mālī and observes that the cows were of a dwarf breed.* This appears to be a correct observation as in West Africa we see, even today, in addition to the long-horned yellow Mandingo breeds and the Moroccan breeds, also a dwarf short-horned breed of

cattle.* Ibn Baṭṭūṭa was offered two head of cattle, undoubtedly intended as food, in the capital of Mālī.* It can be seen, however, from his further notes, that beef was only rarely eaten in Mālī, usually at some ceremonial feast, a custom which persists among the Mandingo tribes.* Finally, Leo Africanus is referring to the area of the ancient state of Mālī when he writes of enormous herds at the city of Ghinea (Jenne).* Unfortunately it is not clear whether the medieval Mandingoes kept cattle for prestige purposes (as is done nowadays), for slaughter, or for milk. At the present time, cows are not milked in territories occupied by the Mande tribes.* According to Golberry, members of this ethnic group inhabiting Bambuk on the upper reaches of the Senegal used cows' butter in the preparation of various dishes at the end of the eighteenth century.* It is possible that the fresh butter bought by the French explorer Caillié from local Negroes in this area was made from cows' milk; this was during Caillie's journey from Jenne to Kabara early in the nineteenth century.* It is clear that more research is needed to ascertain whether cattle were milked by various ethnic groups in the western Sudan in the past.*

According to Leo Africanus, cattle-rearing flourished in the city of Tombutto or Timbuctu, which originally belonged to the state of Mālī and later to the kingdom of Songhai. It must be noted, however, that the people of this city were largely Tuareg, and thus non-Sudanic and non-agricultural.* Leo Africanus also mentions cattle-rearing in the Hausa lands of Guber (Gober)* and Cano (Kano);* in the former, the cattle were of a dwarf breed.* Today the Yoruba in southern Nigeria, south of Hausaland, keep dwarf cattle resistant to tsetse fly. This breed is slowly being replaced by Zebu cattle imported from the north.*

Finally, Leo Africanus found cattle in the hilly parts of Borno (Bornu).* This is confirmed by the first European explorers in the nineteenth century, who stress the importance of cattle-keeping in the economy of the country. Beef was regarded there as meat inferior to mutton or goats' meat and camel meat.* This prejudice may have been adopted by the natives of Bornu from Arabs who disliked beef.*

We do not know anything definite about the people known as the Ankarar, who probably lived in areas east of Lake

Chad, and were reputed to have large numbers of cattle, as
43 reported by al-Maqrīzī.* Leo Africanus mentions numerous herds of cattle at Gaoga, a country which should perhaps be identified with the kingdom of Bulala, the centre of which was in the
44 neighbourhood of Lake Fitri.*

Sheep

Sheep were equally important in the economy of the western and
45 central Sudan.* They were bred for meat as well as for milk.

Al-Bakrī records that in the western Sahara a breed
46 of sheep was kept which he calls al-kibāsh ad-damāniya.* The first part of the name means "rams" while the second is an adjective akin to the word damān or dimān, which is the Arabic form of the Berber name for the Saharan sheep (Ovis longipes) — adaman. This breed is without fleece, and has a long thick tail,
47 the meat of which is highly prized.* This animal is also mentioned by Leo Africanus, who calls it ademmanin, adimmain or addiman, and reports that the people of Libya (i.e. Africa) including those of the "Libyan Desert" (Sahara) milked these
48 sheep, making butter and cheese from their milk.* In another passage, Leo records that this same breed of sheep was reared
49 at Tesset (Tichit in south-east Mauritania).* In all probability it was the very same breed which was kept in the western Sahara by the Berber Zenaga, as we know from a further passage in Leo Africanus, who saw sheep-rearing in the desert near Arawan; he
50 adds that the Zenaga were particularly fond of mutton.*

Al-Bakrī reports that near the western borders of this region, sheep were kept by the inhabitants of the Ayūnī peninsula, mainly fishermen whose staple diet was the meat of
51 giant turtles.* Mutton is still popular with the Senegalese inhabitants of the coast and is frequently eaten by the fishermen of Guet N'Dar who belong to the agricultural tribe of the
52 Wolof.* On the other hand, if al-Bakrī is to be believed, the people of Sillā, between Takrūr and Ghāna, near the middle
53 Senegal, had cattle but no sheep at all.*

Unlike them, the people of the town of Audaghast, northeast of Takrūr and Sillā, kept sheep in great numbers. According to al-Bakrī, whom we have just quoted, both ewes and rams were so numerous there that it was possible to acquire ten sheep, and sometimes more, for the value of one gold mithqāl or
54 dīnār.* Similarly, lamb was a common food in the oasis of

Īwālātan (Walata), south-east of Audaghast. This we know from
55 Ibn Baṭṭūṭa who stayed there in 1352.*

In the fourteenth century, a fair number of rams and ewes were kept in the state of Mālī. According to al-ᶜOmarī, the local sheep, like the other domestic animals, did not graze in pastures, at least so far as the capital was concerned, but went freely about the town rummaging for food in dung heaps and
56 among refuse.*

It may be added that even today sheep, with cows, goats, donkeys and horses, remain among the numerically largest groups of domestic animals kept in the northern and middle
57 parts of the area occupied by the Mandingoes.* Rams continue to play a part of some importance in the customs of the people of this area. Thus, for example, in the Kita district of Mali, rams
58 are offered as marriage gifts.* It is possible that this custom dates back a long way. In the past, rams seem to have played some role in the customs and beliefs of Mālī, where they may have been symbols of royal power; this is deduced from two references in Ibn Baṭṭūṭa, who reports that during an audience held by the king of Mālī, a prominent role in the ceremonial was played by the bringing in of two saddled horses and two
59 rams.*

Sheep were also kept in the territory of the Songhai or Gago state, as it was called by Leo Africanus after the capital, Gago (Gao). According to him, the territory, outside the town of Gao itself, was inhabited by agriculturalists and pastoralists. The latter wore sheepskins in winter. From this it would seem that sheep were slaughtered, no doubt mainly for
60 meat.* South of the middle Niger, in areas which were incorporated in the Songhai state in the sixteenth century, Tuareg (Berber) tribes lived in the nineteenth century, who, like their ancestors, kept sheep and ate mutton, particularly on festive
61 occasions.*

Leo Africanus mentions large herds of sheep in the Hausa provinces of Gubeŕ (Gobir) and Cano (Kano) in present-day
62 Nigeria.* The situation has not changed in that part of Hausaland and in some other parts of Nigeria in modern times. Barth, for example, mentions sheep as one of the most essential articles of trade in the Hausa markets (e.g. near the town of
63 Sokoto).*

On the question of the keeping of sheep in the medieval state of Bornu, we have only one piece of information, which we owe to Ibn Sa^{c}īd (quoted in Abu 'l-Fidā'). He says that in a land subordinate to the town of Jāja (usually identified as
64 Bornu) the people bred rams nearly as large as a small donkey.* Obviously this can only refer to Ovis longipes, the Saharan ram, which Leo Africanus also compares in size to an average-sized
65 donkey.* Considering the economic situation in Bornu in the nineteenth century, sheep-rearing and the resulting consumption of mutton must have been going on there for a long time and on
66 a large scale.* To the east of Lake Chad, in the fifteenth century, large flocks of sheep were kept by the Sudanic tribe of the Ankarar (about which no other information is available),
67 as we know from a geographical treatise by al-Maqrīzī.* The state of Gaoga (the state founded by the Bulala people near lake Fitri), where Leo Africanus also observed a considerable number
68 of sheep,* should be sought in much the same area.

Sheep were also kept in the territory occupied by the Zaghāwa people, this name being extended by the early medieval Arabic writers to the kindred tribes of the Daza, Teda (Tebu), Kreda, Bulgeda, etc., and partly also to Kānem. We owe this information to the Arab geographer al-Muhallabī, whose account
69 of the land of Zaghāwa is cited by Yāqūt in his work.*

Goats

70 To pass on to the keeping of goats and the use of goat meat:* we will begin with the land of Takrūr in western Senegal. The
71 people there kept goats, as reported by al-Idrīsī (1154);* although he says that the food of the people of Takrūr consisted of millet, fish and milk products, it can be assumed that at least some of the goats were slaughtered for meat, as in recent times by the Tuareg Kel-Ulli, nomadizing not far from Timbuctu,
72 who kept goats for their meat rather than for their milk.* The inhabitants of the town of Sillā, on the eastern borders of the kingdom of Takrūr, had neither goats nor sheep in the eleventh
73 century, if we are to believe al-Bakrī's account.* On the other hand, al-Idrīsī maintains that the herds of domestic animals belonging to the inhabitants both of Takrūr and of Sillā
74 consisted of goats and camels.*

According to al-Bakrī, the people of the town of Īrasnī, in the western Sudan in the basin of the middle Senegal

or middle Niger, kept goats of unusually small size in the eleventh century. Presumably, though the author does not actually say this, the new-born he-goats were slaughtered for
75 meat, while the she-goats were kept.* This reference in al-Bakrī, together with a rather obscure passage in al-ᶜOmarī, is the only information on the keeping of dwarf goats in West Africa during the Middle Ages. This variety still lives in the same area, and is the only kind of domestic animal kept, for
76 example, by the Gagu people.*

Another people of the Mandingo group, the people of the medieval state of Mālī, kept goats in the Middle Ages, as their descendants do to this day. Al-ᶜOmarī maintains that the people of Mālī (or, at least, of the capital) had no pasture for goats, so that these animals, like the sheep, fed on what they could dig out of refuse or dung-heaps. Their goats were noted for their fecundity, and, according to this informant,
77 bore seven or eight kids at a birth.* In fact, goat-keeping was popular all over the country of Mālī, and it still continues to
78 be very common among the Mandingoes.*

We have no Arabic evidence on goat-keeping among the
79 medieval Songhai from Gao.* The earliest information concerns a much later period, the Berber kingdom of Agadez (Agadez), in the southern part of which, goats as well as cows were kept early in the sixteenth century, when Leo Africanus was travel-
80 ling through West Africa.* The situation had not altered in the middle nineteenth century; the German traveller Barth mentions goats as an important item of produce at Tintellust, on the way
81 from Aïr to Agades.*

We may assume that goats were also kept in the Hausa provinces of northern Nigeria in the Middle Ages as at present. Goats are fairly common nowadays in many parts of northern
82 Nigeria, and goat meat is eaten.* In fact, in the state of Borno (Bornu) bordering on the Hausa provinces to the east, goats as well as cattle were kept in the hilly parts of the
83 country, as attested by Leo Africanus.* Barth and Nachtigal mention herds of goats in Bornu as well as the fact that fresh (not dried) goat meat was the favourite food of modern
84 inhabitants of this country, who preferred it to beef.* It is possible that goat-keeping was introduced here from the north by the Daza, Teda, Bulgeda or Kreda. Nachtigal reports that

the last-named had large herds of goats and that goat meat was
85 very popular.*

Camels

It would seem that some of the peoples of West Africa, in particular the Berber tribes, ancestors of present-day Tuaregs
86 and of the Zenaga in southern Mauritania, ate camel meat.* When Leo Africanus was crossing the Arawan plain (Araouan on French maps) with a caravan from Morocco to the Sudan, a prince of the Berber Zanaga (Zenaga) tribe nomadizing in this area invited him with the whole caravan to his camp, where he had various animals slaughtered as food for his guests, including several
87 camels both young and old.* Camel meat was commonly eaten by the Berber nomads as well as by the Daza, Teda and related Negro tribes. This is attested, for instance, by the account of his travels by Ibn Baṭṭūṭa; when he is describing the salt-mines at Taghāza, in the north of the western Sahara, and the settlement consisting of slaves of the Berber Massūfa tribe who were working in the salt-mines, he reports that they fed on dates
88 (imported from Morocco) and on camel meat.* It is also probable that the herds of camels belonging to the Berber inhabitants of
89,90 the town of Audaghast, mentioned by Ibn Ḥauqal* and al-ᶜOmarī,* supplied the town and possibly neighbouring areas of the western Sudan as well, with meat as well as with milk products.

Among the Sudanic population proper, it was above all the people of present-day Senegal who owned camels. Al-Idrīsī reports that the people of the town (and land?) of Takrūr, of the town of Sillā and of Ghayārā (Ghayāro, Ghuyāro, now ?
91 Gadiaro on the upper Senegal) had herds of camels.* Admittedly, he does not mention that the meat was eaten, but there seems to
92 be nothing to prevent us thinking this.* In the state of Mālī, the centre of which lay east of the upper Senegal basin, the people kept camels, though they did not know how to saddle
93 them.* Was the meat eaten, did they use only the milk, or were the camels used only for riding? It is hard to say. At any rate, the eating of camel meat was not forbidden by any ancient local custom. This is apparent when we consider, for example, the accident which befell Ibn Baṭṭūṭa on his way from the town of Mālī to the town of Mīma, on his journey to Timbuctu. At a town called Qurī-Mansā (presumably after a governor of the same name), the camel ridden by Ibn Baṭṭūṭa died. It was at once

eaten by the Negro people of the town, "according", as Ibn
94 Baṭṭūṭa says, "to their custom of carrion-eating".* Unfortunately, we have no information about the eating of camel meat at the present time by the Malinke or any other tribe of the
95 Mandingo group.*

The people of Timbuctu, who, as we know, were of Berber (Tuareg) origin, owned camels, as stated by Leo
96 Africanus.* That these animals were sometimes used for food is attested by a passage from Fernandes (1506-7), who says that at Timbuctu, they ate the meat of the camels which brought salt
97 from Ygild (Sebkha Ijil).* It is possible that the animals were so weak that they were slaughtered, as is done at the present day with animals in poor condition in the Sahara.

The next reference in Arabic sources relates to the towns and territory of the Berber kingdom of Tadmekka, where the people kept camels, according to al-ᶜOmarī's information, and probably, like their relatives from more remote areas of the Sahara, ate their meat as well. Al-ᶜOmarī also gives information on camel-keeping in Aïr, another Berber kingdom on
98 the borders of the Sahara and West Africa.*

There is no mention of camel-keeping in Hausaland or in the kingdom of Bornu, its neighbour to the east, in the medieval Arabic sources. It would seem, however, that the situation there must have been very like that at Aïr on one side, where camels were reared, while it was also very similar to that obtaining in territories on the other side occupied by the tribes which the medieval Arab writers call the Zaghāwa, which included, in addition to the Zaghāwa proper from the borders of Wadai and Darfur, other related peoples like the Teda, Daza, Bulgeda, Kreda and others, bordering on the kingdom of Bornu on the north and north-east. We must recall in this connection a reference in al-Idrīsī, who tells us that one of the nomadic tribes of the Zaghāwa group, the Saghwa (Saghawa),
99 fed exclusively on milk, butter and camel meat.* The consumption of dried camel meat at Tibesti is attested for the second
100 half of the nineteenth century by Nachtigal.* The same traveller reports that the inhabitants of Bornu preferred camel meat to
101 beef.*

Donkeys

Donkeys were also kept in the country of Mālī. This is mentioned

by al-ʿOmarī, who adds that it was a very small breed of donkey.* Ibn Baṭṭūṭa noticed donkey's flesh used for food by the people of Mālī, which he, as a good Muslim, found shocking.* Donkey's flesh was also eaten by the Berber inhabitants of Ygild in Mauritania — this we know from Fernandes.* I have unfortunately not been able to ascertain if donkey meat is still part of the Mande diet. It is still eaten by part of the population of southern Nigeria, e.g. in the Bussa Emirate in the Ilorin province, where donkey carrion (not meat of animals purposely slaughtered), is eaten.* We may add that donkey meat was served as a delicacy at the court of the king of Oyo in southern Nigeria.*

Dogs

Dogs were common in the agricultural countries of western and central Sudan. Al-Bakrī writes about watch-dogs in royal palaces in Ghāna,* and Leo Africanus notices dogs in the palace of the king of Bornu.* Ibn Baṭṭūṭa makes a more interesting remark — he reports that Negroes (people of Mālī belonging to the Mande group) often ate dogs' flesh, a custom of which he, as a Moslem, strongly disapproved.* The custom persisted until recent times. The French explorer Caillié noted in the nineteenth century that the pagan Bambara tribe (belonging to the Mande group) often ate dogs. Dogs intended for eating were fattened and then eaten at a meal during which beer was drunk and which had all the appearance of a ritualistic orgy.* Moslems among the Mandingoes would not eat dogs.* It appears that the Mande people had accepted the custom of eating dogs' flesh together with certain religious and magical beliefs from the neighbouring Berbers. Dogs were eaten, for instance, by the Berber population of Sijilmāsa in south-east Morocco. Sijilmāsa had lively commercial and perhaps also cultural contacts with the western Sudan, which would facilitate the transplanting of this custom. The custom of eating dogs' flesh in Sijilmāsa is noted by al-Bakrī,* by Abū Ḥāmid al-Andalusī al-Gharnāṭī — a twelfth-century Arab traveller,* and by Abu ʾl-Fidāʾ, a fourteenth-century Arab geographer.* Al-Bakrī mentions that dogs' flesh was eaten by Berber inhabitants of the city of Qasṭīliya (or Tozeur) in Tunisia.* The custom has persisted to this day in some oases in the central Sahara, as observed by L. C. Briggs, who stresses the ritualistic, magical and

medicinal character of this food among the Berber peoples of
116 Sahara oases (e.g. Mzab).* Berber influences may be responsible
for this custom among the Yoruba in southern Nigeria (as
117 observed by Bascom).*

Poultry

Let us now go on to the keeping and eating of poultry in West Africa. The most important domestic birds, kept for many centuries in these areas, are chickens. They are a popular food,
118 but are sometimes reserved for women and children only.* In all probability the situation was similar in the period from the early tenth to the early sixteenth centuries, although Arabic sources from that period provide comparatively little information on the keeping and eating of chickens. The information refers only to two countries, the kingdom of Mālī and the state of Songhai or Gao. In 1352, Ibn Baṭṭūṭa, on his way from the oasis of Īwālātan (Walata) to the town of Mālī, observed that in the villages along the route, his caravan was met by Negro women who offered various articles for sale, including
119 chickens.* According to al-ᶜOmarī's account, derived from the king of Mālī, Mansā Mūsā, the people of this country kept numerous domestic animals, including hens. The information is repeated from al-ᶜOmarī by the fifteenth-century Arab author
120 al-Qalqashandī.* Ibn Baṭṭūṭa also reports that in Gao various foodstuffs were to be found, including rice, milk, fish, and
121 also many chickens.*

Geese were also kept in Mālī. On this subject, al-ᶜOmarī quotes Mansā Mūsā, the king of Mālī already referred to, who went to Cairo early in the fourteenth century during
122 his pilgrimage to Mecca.* Geese are rare in West Africa nowadays, and are known to be kept only in countries occupied by
123 the Songhai.* It is possible that there has been a mistake, and that al-ᶜOmarī had in mind ducks, which are kept at Jenne, within the territory of the ancient state of Mālī, and in
124 neighbouring Timbuctu.*

Some information has been preserved about pigeon-
125 keeping in Mālī, again through al-ᶜOmarī quoting Mansā Mūsā.* This information appears to be correct, as pigeons are still kept by the people of Jenne. Barth, who visited the middle Niger in the nineteenth century, saw pigeons among the livestock in Timbuctu and Kabara, i.e. within the borders of the

126 state of Mālī at its maximum extent.*

Ibn Saᶜīd, in a passage quoted in the geographical treatise by Abu ʾl-Fidāʾ, mentions Guinea fowl (Arabic ad-dujāj
127 ar-ruqṭ) in the land of Jāja, i.e. in present-day Bornu.* About the middle of the nineteenth century, guinea fowl were also kept in Timbuctu, where they were called el-kabesh, or, in the language of the Aulimmiden (Auellimiden) Tuareg, tailelt, pl.
128 taílalēn.*

Carrion

I have already mentioned more than once in the course of this study that the medieval Negro peoples of West Africa ate carrion. This was observed by Ibn Baṭṭūṭa, who saw for himself at Qurī Mansā, a place on his route from the town of Mālī to Timbuctu, how the flesh of the camel he had been riding, and which fell under him, was immediately eaten by the Negro
129 inhabitants of the place.* According to another passage in Ibn Baṭṭūṭa's account, the eating of carrion was one of the objec-
130 tionable customs of the inhabitants of Mālī.* Presumably what he had in mind was that the poor populace used to eat dead domestic animals thrown into the bush in that country, as we
131 learn from the geographical treatise by al-ᶜOmarī.* The eating of dead animals has persisted occasionally till recent times: let me recall what we have said about the eating of donkeys'
132 flesh.* It is also possible, however, that by the term "carrion", Ibn Baṭṭūṭa may mean animals slaughtered in a non-ritual way, and consequently abhorrent to Moslems.

GAME

Antelopes

In addition to the meat of domestic animals and poultry, some part was played by game in the food of the peoples of West Africa in the period between the early tenth century to the early sixteenth century; it would seem that, in fact, game then played a much more important part than it does at present. From the Arabic sources of that period we learn that the people hunted "wild oxen", i.e. large antelopes, and related animals called lamṭ, giraffes, ostrichs, hippopotami, crocodiles and elephants. In addition they caught turtles, especially sea turtles, and the peoples of some areas also hunted snakes. Medieval Sudanic hunters, like those of the present day, used

bows and arrows, sometimes poisoned, and took hunting dogs with them. Crocodiles were hunted with spears, hippopotami with
133 javelins, presumably with a harpoon-like edge.*

Let us begin with addax antelopes(Antilope bubalis) or, as the Arabs called them in the Middle Ages (and still do),
134 "wild oxen" (Baqar al waḥsh).* According to Ibn Baṭṭūṭa, who knew about this from personal experience, they were hunted on the desert plain to the north of the Īwālātan (Walata) oasis, in the south-eastern part of present-day Mauritania. Antelopes were killed for meat; but according to a common notion of the natives, the eating of this meat increased thirst, so that many
135 did not eat it.* Ibn Baṭṭūṭa does not state the ethnic origin of the men hunting "wild oxen"; he does not say if they were the Berbers nomadizing in considerable numbers in these areas, or the native Negro population. It would seem, however, that he was thinking of the Sudanic peoples, in view of the fact that, as he reports, they hunted antelopes with arrows, a weapon not used by the Berbers, and used dogs to help them. In all probability, the hunters were members of some very primitive Negro tribe. According to Barth (nineteenth century), this type of antelope was also hunted by the Nemadi who used dogs,
136 in the Baghena country on the Mauritanian borders.*

More information on antelope-hunting is given by
137 al-ᶜOmarī,* who reports that in desert areas adjacent to the
138 land of Mālī (probably in the present-day Baghena, Guidimaka* and other countries bordering on them, which abound in antelopes) they were hunted with poisoned arrows, a weapon typical of the Sudanic peoples, not used by the Berbers. In this case, these hunters should presumably also be included among the Nemadi or the Negroes. Moreover, al-ᶜOmarī clearly stresses that the "wild oxen" were hunted for their meat, which was eaten after
139 cutting off the parts poisoned by the arrows.* I may add that the antelope-hunting Negro population of Borku, in the Chad Republic, uses trained dogs just like the Nemadi, and sometimes
140 even spreads nets to catch antelopes.*

Oryx

The people of the land of Takrūr in present-day Senegal, and extending originally into southern Mauritania, hunted an animal called labṭī; as reported by the Maghribi traveller Ibn al-Faqīh ᶜAlī al-Janahānī al-Maghribī (quoted by the thirteenth-

century geographer al-Qazwīnī), the hide of this animal provided
141 material for shields highly valued in these lands.* This information makes it possible to identify labṭī as the animal called lamṭ (the oryx antelope), which was reported for instance in the area of Jabal Lamtūna (Mauritanian Adrar), from the hide
142 of which the natives made shields of the same name.* We owe this last piece of information to the Arab geographer Ibn Sa^{c}īd
143 (thirteenth century).* According to another passage in his book, the lamṭ, an animal resembling the gazelle but much larger, highly resistant to thirst, was found in great numbers in the desert of Nīsar (Īsar) which extended northwards from the land of Ghāna (on the borders of Mauritania and the Sudan) towards the town of Sijilmāsa. The desert, so Ibn Sa^{c}īd tells us, lay
144 to the west of the town of Audaghast.* The lamṭ was hunted not only for its valuable skin, but also for its flesh. Leo Africanus reports that the people of the town of Guadan (Wadan, Ouadane) in the hilly land of Mauritanian Adrar, ate no meat other than that of antelopes, lamṭ and ostriches, which were
145 killed by setting snares.*

Gazelles

Another kind of game which the people of West Africa hunted was the gazelle (Arabic ghazāl, pl. ghizlān). Al-Idrīsī mentions gazelles living in the scrub along the Senegal river (called the Nile by this author, as is the custom with medieval Arabic
146 geographers).* It is possible that this refers to Gazella dama. Very probably the animal called "deer" by Leo Africanus, who adds that it was hunted in the Sahara by the Arabs, should be
147 identified as this same species (or as wild sheep?).*

Hares

Among the animals living in the scrub on the Senegal river,
148 al-Idrīsī also mentions hares (Arabic arānib in the plural).* I think this refers to the species Lepus aegyptiacus, still hunted by the Saharan nomads, whose occurrence in the western Sahara in the Middle Ages is attested by Duarte Pachecho
149 Pereira.* The hares (arānib in Arabic) which, according to al-Bakrī, lived near Ghadames in Tripolitania, were probably
150 also Lepus aegyptiacus.*

Giraffes

The people of West Africa hunted giraffes (zarāfa in Arabic) in the Middle Ages, as they have done in modern times. There is a

reference in al-Idrīsī to giraffes living in the scrub on the Senegal river, which probably refers to the area of the historic
151 state of Takrūr.* According to al-Qazwīnī, there were large numbers of giraffes in the land of Takrūr, which were caught
152 and "slaughtered like cattle".* A little further south-east, according to al-Bakrī, there were giraffes in the land of
153 Gharantal, near the middle Senegal.* A giraffe is mentioned by
154 al-Idrīsī as belonging to the zoo owned by the king of Ghāna,* while Ibn Khaldūn (fourteenth century) mentions a giraffe sent as a gift in 1360-1 by the king of Mālī to the Moroccan sultan
155 Abū Sālim.* It must be added that giraffes still occur in the countries of the middle Senegal and the upper Niger; in the dry season they even appear in the land of Guidimaka near the
156 southern border of Mauritania.* Giraffes used also to occur in the Lake Chad area, and in 1257, the king of Kānem and Bornu offered a giraffe as a gift to the Hafsid sultan al-Mustanṣir
157 of Tunisia.* According to Nachtigal, gourmets in Bornu went to great lengths to obtain the meat of young giraffes, which,
158 according to this traveller, was really very good.* Barth also
159 considered giraffe meat to be the best of all African foods.*

Ostriches

The flesh of ostriches was eaten not only by the people of
160 Mauritanian Adrar* — a people with a strong Negro substratum, as we know from elsewhere — but also by the native Berbers, a fact attested by Leo Africanus. In about 1512 he travelled with a caravan across the plain of Arawan (north of Timbuctu), and was invited, with other travellers who were with him, by a prince of the Berber Zanaga tribe (now Zenaga, the Ṣanhāja of the medieval Arabic sources); to feed them, the prince had several camels and sheep slaughtered, and also a few ostriches
161 caught on the way.* Ostrich-hunting still persists, for instance in the north-east part of the country called Guidimaka, on the borders of the western Sudan and the Sahara. The Moors, partly descended from the ancient Zanaga (Ṣanhāja), hunt ostrich on horseback, following their prey until it is completely worn out; then they kill it. According to beliefs still current, ostrich flesh restores strength to old people, and cures
162 certain diseases.*

Hippopotami

The people of West Africa were also fond of hippopotamus

flesh. This is attested both by al-Bakrī (1068) and by Ibn Baṭṭūṭa (mid-fourteenth century). Al-Bakrī refers to the neighbourhood of Sillā on the middle Senegal, at the south-eastern edge of the Sudanic state of Takrūr whose population was converted, at least formally, to Islam in the first half of the eleventh century A.D. This is what al-Bakrī writes:

> In that part of the course of the Nile [here, the Senegal, or possibly the upper Niger?] which borders on this province [i.e. Sillā], there is a place called Ṣaḥābī, where there occurs a sea animal resembling the elephant in the bulk of its body, in its nostrils and its teeth. This animal is called qafū (qafō). It grazes on the plain, then takes refuge in the Nile [Senegal? Niger?] Hunters recognise the place in the river where the animal is, by the movement of water which goes along its spine. They go there armed with short iron darts, whose hilts have a ring with a long rope attached. They throw a great many darts at the animal, as a result of which it sinks and throws its weight deep in the river so long that it dies. Then its body floats up and the hunters draw it towards them by means of the ropes attached to the darts. They eat the flesh of these animals, and from their hide they produce whips called saryāfa which are exported
163 to other countries.*

There is no doubt that the animal referred to in this passage by the name of qafō (a name certainly of Sudanic origin), is the hippopotamus, as has been recognized by the
164 French translator and editor of al-Bakrī's work, de Slane.*

There is also an unequivocal reference to the eating of hippopotamus meat in Ibn Baṭṭūṭa. He saw hippopotami, which he calls "sea horses" (Arabic khayl al-baḥr) on the upper Niger, during his journey from the town of Mālī to Mīma, going towards Timbuctu. He saw them a second time during a voyage by ship on the Niger from Timbuctu to Kaukau, i.e. Gao, capital of the Songhai state. Ibn Baṭṭūṭa reports that the people of this country (presumably of the banks of the Niger between Timbuctu to Gao) hunted hippopotamus with harpoons of the same kind as
165 those described by al-Bakrī, and that they ate their flesh.*

In West Africa the people still continue to hunt hippopotami and eat their flesh. On the middle Niger, the fishing tribes Somoni, Bozo, Nupawa and Sorko excel in hippo-
166 potamus-hunting with harpoons.* Nachtigal, describing the food of the people of Borkou, reports that they felt an aversion to hippopotamus flesh; on the other hand, it was eaten by the

167 people living on the banks of the Shari (Chari) river.*

Sea-cows

It is possible that the "sea horse" recorded by Leo Africanus
168 (Description de l'Afrique, 565)* does not refer to the hippo-
potamus but to the "sea-cow" (Trichecus senegalensis), ayū in the
169 language of the Auellimmiden Tuareg,* an animal which lives in
170 stagnant water as well as in running water in West Africa.* In
the Songhai legends current in Niger about Farañg, king of Gao,
171 the hunting of this animal is sometimes mentioned.*

Crocodiles

It seems that the people of Mālī, the Mandingoes, also ate crocodile flesh. Crocodile-hunting on the Niger is described by al-ᶜOmarī after an account by ad-Dukkālī, one of his principal informants about Mālī. According to ad-Dukkālī, crocodiles were
172 hunted by driving long spears into their hearts.* Although we lack information on the eating of crocodiles' flesh in West Africa during the Middle Ages, the fact may be inferred from nineteenth-century information about the inhabitants of the banks of the Shari (Chari) river in Bornu; according to Barth and Nachtigal, these people were very fond of the meat of
173 crocodiles.* The Moslem inhabitants of Bornu, as reported by Nachtigal in his account of his travels in this country,
174 regarded crocodile flesh as unclean (Arabic makrūh).*

Waran (monitor lizard)

Another animal hunted in West Africa, the meat of which was eaten with relish was the big lizard waran (Varanus griseus), the monitor lizard, known in Arabic as waran or waral (also
175 warral).* There is a reference in Leo Africanus to the eating of the meat of this lizard, after cutting off its head and tail which were regarded as poisonous, by Saharan Arabs. Leo saw this, though he did not dare to taste it himself. The same
176 author records the name of waran as guaral.* Barth saw this same lizard (which he calls Psammosaurus griseus) a little to the north of Damerghu. He states that the people of Asben, who
177 called it démmo, considered lizard meat an excellent food.*

Ḍabb

The people of the Sahara, according to Leo Africanus, also ate the meat of another kind of lizard, that known as dubb (cf. literary Arabic ḍabb "lizard"). He thought the meat of this lizard was very good and says that it tasted like frog. This is

178 Uromastix acanthinurus.* We may add that lizard meat is eaten by various peoples, including the people of the region of
179 Bandiagara and Hombori in the Niger bend.*

Elephant

Leo Africanus has left an account of elephant-hunting in Negroland, but he does not say what country he is referring to. But we may guess that he was referring chiefly to West Africa, which was best known to him from personal experience. According to his account, the Negroes killed elephants, to obtain the
180 tusks which they offered for sale.* But did they not also do it to obtain the meat? — this seems very likely, particularly when we consider that elephant meat has continued to be very popular
181 in Africa south of the Sahara.*

Turtle

The flesh of sea and river turtles played some part in the food of the people of West Africa during the Middle Ages. Sea-turtle flesh, according to al-Bakrī (1068) was the chief food of the people of the Ayūnī peninsula, near the estuary of the Senegal, despite the fact that these people kept great numbers of sheep and other domestic animals. He adds that the turtles were of great size and that there were vast numbers of them in the sea
182 around the peninsula.* Not far from the Ayūnī peninsula, according to al-Bakrī, was the place called Aulīl. According to an account by Ibn Saʿīd, who wrote two centuries after al-Bakrī, the people of this place (whose huts were made of cane and straw), fed on fish and the flesh of turtles, by which he presumably meant sea-turtles, as Aulīl was very probably near the sea, on the estuary of the Senegal. Ibn Saʿīd also mentions "Ambra Island (peninsula)", also known as "Turtle Island (peninsula)", which is very probably the same as the Ayūnī peninsula described by al-Bakrī. According to Ibn Saʿīd, "Turtle Island" owed its name to the great number of turtles that lived there. He says that the people hunted turtles, cut up the meat
183 and exported it to the neighbouring countries.*

Al-Bakrī also mentions turtle-hunting on the Niger, near the place called Tīrqā (also known as Tīreqqā), six days' journey from Raʾs al-Māʾ, between Timbuctu and Gao. According to him, the turtles at Tīrqā grew to an exceptional size and dug underground passages large enough for a man to enter. "To pull one of these animals from its hiding-place", al-Bakrī

reports,"it must be tied with ropes, and it needs the strength
184 of several men [to pull it out]."* Though al-Bakrī does not mention the purpose of turtle-hunting, it seems probable that the main aim was to obtain the meat. The German traveller Barth notes that on the way from Kukwa (Kuka in Bornu) to Kanem, he saw many small turtles, considerably smaller than those he had seen in the country of Aïr; he adds that he prepared turtle soup from them, but he does not say whether this dish was known
185 to the local people.*

Snakes

186 Let us go on to discuss food obtained from snakes.* Al-ᶜOmarī quotes an account by Abū ᶜAbdallāh Muḥammad ibn Raghano, a trustworthy scholar and Arab notable from Almeria in Moslem Spain who lived in the first half of the fourteenth century. He reports that the ship on which Abū ᶜAbdallāh was travelling with his goods (presumably from Almeria) to some African harbour, apparently situated on the Atlantic coast of Morocco, was driven by a storm towards the African coast further south. The traveller, with the entire crew of the ship, somehow managed to reach the land near a "town" inhabited by Negroes. Unfortunately it is not possible to find out what part of the coast this was. It is not impossible, however, that Abū ᶜAbdullāh touched land on the coast of present-day Senegal, though, on the other hand, it is also possible that the settlement he reached lay in southern Mauritania, where the Negro population must have been much more numerous in the fourteenth century than it is today, and extended considerably further north. Describing his stay among these people (who were in contact with areas to the north and eventually helped the shipwrecked group to reach the Mediterranean coast of Morocco, probably overland via Sijilmāsa), Abū ᶜAbdallāh gives us some information on their way of life. Among other things, we learn that, on account of the absence of vegetable cover and pasture, their principal foodstuff was the flesh of snakes, both large and small, of
187 which there were a great number.*

The desert coast on which Abū ᶜAbdallāh landed was presumably not very far from the Nīsar desert, which includes the southern part of present-day Mauritania, and was inhabited, according to al-Idrīsī (1154), by Negroes. In this desert, so al-Idrīsī says, snakes were found of exceptional thickness;

188 the Negroes hunted them, cut off their heads and ate them.* The presence of many snakes north of Īwālātan (Walata) is also reported by Ibn Baṭṭūṭa, but he does not say whether they were
189 eaten by the local nomads.*

The flesh of snakes was also eaten by the Negro population of the eastern Sahara, ancestors of the present Zaghāwa, Teda, Daza etc. Al-Idrīsī, from whom this information comes, mentions the eating of snakes by the people of Shāma, a country somewhere to the north-east of Gao; he adds, moreover,
190 that this food also had medicinal properties.* He records also the eating of the flesh of large snakes by another Sudanic people in the eastern Sahara, presumably the inhabitants of
191 present-day Tibesti.*

FISH

An important part in the nourishment of the medieval population of West Africa was played by fish, both marine and fresh-water. The eating of sea fish is attested by Ibn Saᶜīd (thirteenth
192 century).* The information relates to the people of Aulīl, on the estuary of the Senegal, perhaps near the present-day salines of Gandiole; these people were the ancestors of the present-day Imraguen, whose economy is based mainly on sea fishing. They
193 catch great quantities of fish, mainly with nets;* according to Revol, one camp of these fishermen may at a single cast supply the Government offices at Nouakchott with as much as 500 kg fish. Sea fish, fresh and dried and even smoked, still forms an important part of the food of the inhabitants of Senegal, the
194 Wolof or the Serer.*

Perhaps it was also sea fish that al-Idrīsī has in mind when he records the consumption of fish by the people of the land of Takrūr, on the middle and lower Senegal, and of its
195 neighbour to the south-east, the town of Sillā,* though obviously he may mean also, or mainly, fish caught in the Senegal. Another reference in al-Idrīsī presumably relates to the same areas; according to this, in the westernmost, coastal part of the Sudan (the first iqlīm, first section, of the inhabited part of the world, according to the division made by this geographer) there were various kinds of fish, large and small, on which most of the Negro peoples of these countries
196 fed. Al-Idrīsī reports that these fish were exceedingly fat.*

The same writer notes that the people of the "town" of Mallel, further to the east (this "town" should be identified as the land of Mālī, inhabited by the Malinke) had fish as their principal foodstuff together with camels' and goats' milk and
197 dried camel meat.* Obviously, here he can only mean fresh-water fish, caught in the Niger and elsewhere. This same area is referred to in this connection by Leo Africanus, who mentions the great profusion of fish at the town and in the land of
198 Ghinea (Jenne) on the Niger.* He also records that fish was among the foods used by the people of the town of Cabra (now
199 Kabara) near Timbuctu* — as we shall see later. The people of the banks of the middle Niger also ate fish very often. Thus, for example, at the "town" of Maddāsa, on the northern banks of the Niger, the population fed mainly on fish, as we learn from
200 al-Idrīsī.* Fish was also included in the daily fare of the people of the town of Kaukau (Gao), capital of the Songhai state on the Niger, as reported by Ibn Baṭṭūṭa, who visited
201 this town in 1353.*

We have also some information about fishing and the consumption of fish by the peoples of the Lake Chad area. Indeed, according to the theory propounded by de Goeje, editor of the African part of the geographical work of al-Idrīsī, it is with Lake Chad that we must identify the vast and deep lake described by this author, situated near the town of Abzar in the land of Kuwār (Kuwwār, now Kawār). According to al-Idrīsī, in this lake the people caught fish of enormous size and delicate flavour which occurred there in profusion. Apparently
202 it resembled the būrī (Mugicephalus) which lived in the Nile.* Perhaps this was only a misunderstanding due to the similarity between būrī and the word buni which, in the language of the former inhabitants of this area, the Kanuri, means fish in
203 general.* According to al-Idrīsī's information, this kind of fish was salted and exported to Kuwār (Kawār) where it was sold at a very low price. This information is repeated, in a much abbreviated form, by two later Arabic authors: Ibn Saᶜīd
204 (thirteenth century)* and ad-Dimashqī (first half of the
205 fourteenth century).* Right up to the present day, fish has continued to be an important component of the food of the peoples of the Lake Chad area and of the rivers running into the lake; there have been many villages where the only

206 occupation of the people is fishing, particularly in Bornu.*

PRESERVATION OF MEAT AND FISH

In discussing meat and fish and their consumption in West Africa during the Middle Ages, we cannot leave out the question of their preservation. The only method of meat-preservation transmitted by the medieval Arabic sources was that of drying in the sun, after cutting the meat into slices or strips. For example, according to a passage in the geographical work of al-Idrīsī (1154) camel-meat was preserved in this way by the people of the
207 "town" of Mallel or Mālī.* Camel meat was similarly preserved by the Berbers of the Juddāla tribe, nomadizing in the north of present-day Mauritania and Mālī, near the town of Taghāza, famous for its salines. This is mentioned by the Arab geographer Ibn Saʿīd, quoting the account of the traveller known as Ibn Fāṭima, who visited various places including the western
208 borders of the Sahara.* Mutton was also preserved in the same way. Ibn Baṭṭūṭa mentions the drying of mutton in the small Berber country of Kāhir (Air) belonging to a sultan known as al-Karkarī, adjacent to the sultanate of Takadda (Teguidda) on the route from Takkada to the Tawāt (Tuat) oases. It was to
209 these oases that the dried meat was exported.* According to al-Idrīsī, the drying of meat, including camel meat, was a form of preservation known to the nomadic Negro peoples of the eastern Sahara, for example to the Shāma tribe and the people of a country to the south of the town of Zawīla (Zuila) in the Fezzan, as well as to the Zaghāwa and the Teda, Daza and other
210 related peoples.*

On the other hand, the only method of fish-preserving recorded by the Arab travellers and geographers in medieval West Africa was salting. According to al-Idrīsī, this was done by the inhabitants of the westernmost parts of the Sudan, that
211 is, for example, by the Senegalese,* and also by the people of
212 the shores of Lake Chad, as reported by al-Idrīsī* and confirmed
213 by Ibn Saʿīd who wrote a century later.* The present peoples of the Senegal, such as the Wolof and the Serer, also know other methods of fish preservation; in particular they dry the fish after cleaning it, and sometimes in the rainy season they smoke
214 it.* The people of Bornu and the other shores of Lake Chad also preserve fish by drying it in the sun, as we learn, for example,

215,216 from the accounts of Barth* and Nachtigal.* Thus it is quite probable that, in addition to salting, drying and perhaps even smoking of fish were methods of preservation which were known in the medieval period, but which escaped the notice of the Arab travellers and geographers.

MEAT AND FISH DISHES

Let us go on to meat and fish dishes. It must be emphasized that whereas the direct and indirect information found in medieval Arabic sources concerning the consumption of various kinds of meat and fish by the Sudanic peoples and the intermingled Berber tribes is fairly abundant, information on the preparing of meat dishes is very scarce. Moreover, the available information relates mainly not to the native Negro Sudanic population, but to Berbers who came later, though admittedly even in the tenth century they already had a pronounced streak of Negro blood.

For example, a very popular meat dish, specially common in desert areas, was dried meat, ground up, and with melted animal fat or butter poured over. This recipe is quoted by al-Bakrī (1068), describing the food of peoples nomadizing in the Sahara, apparently, from the context, mainly in the
217 territory of present-day Mauritania.* The grinding of dried meat was presumably done in the same way as observed by Nachtigal among the Negro inhabitants of Tibesti, whom he called Tubu-Reshade. He reports that dried meat was ground with a stone against a hard base long enough for the meat and all the tendons
218 and bones in it to become capable of being chewed and swallowed.*

The population of Tibesti eat meat prepared in this way without cooking, and so did the inhabitants of Mauritania, so far as can be seen from the account by al-Bakrī quoted above. In Bornu, dried meat (Arabic qadīd, in this case always beef) is ground to powder in mortars, a fact observed by
219 Nachtigal.*

The Zanaga (Zenaga) from southern Mauritania, like the other Berber peoples in the Sahara as well as the Berdeua (i.e. Teda), ate dried meat prepared in a different way. According to the description in Leo Africanus, who encountered the Berber Zenaga during his journey from Morocco to the western Sudan early in the sixteenth century, they had for

supper dried meat cooked in milk with butter added. Every one took his share of boiled meat, holding it in his hand, and only after it was eaten, did he drink the remaining soup, using his
220 hand instead of a spoon.*

It was different with the fresh meat of domestic animals or game. The Zanaga of Arawan, who in about 1512 invited Leo Africanus and the whole caravan to their camp, ate fresh meat either boiled or roasted. It was served in slices, seasoned with herbs and a large quantity of spices imported from the
221 Sudan.* It is possible that among the local plants used as spice for seasoning was the shīḥ, absinth, which was added to meat by the Negro people of the Nīsar desert in southern Mauritania, as
222 recorded by al-Idrīsī.* We will speak later about spices and seasonings used in the Sudan.

The Sudanic Berbers also ate mutton roasted on the spit, as was noted, for example, by Ibn Baṭṭūṭa, who ate this during his stay at the camp of the sultan of the small state of
223 Takadda.* In the Sudan proper, at the town of Mālī, beef fried in the vegetable fat called ghartī (gharitī, gharitē, shea butter), was eaten as a luxury. This dish was sent to Ibn Baṭṭūṭa by the sultan of Mālī as a solemn gift after a mourning
224 ceremony held at his palace.*

As to boiled fresh meat, it must be added that, according to al-Idrīsī, the Negro people of the desert of Nīsar in southern Mauritania, north of the lower Senegal, ate snakes
225 boiled in water with the addition of salt and the herb shīḥ;* the dish was regarded as a special delicacy. The Shāma people of the eastern Sahara, presumably one of the Zaghāwa-Teda-Daza group, living in areas to the north-east of Gao, cooked snakes after cutting off their heads and tails and skinning them. This
226 interesting piece of information also comes from al-Idrīsī.*

We have one other piece of medieval information about a meat dish prepared by the people of West Africa, which we owe to Leo Africanus. He reports that the people of the town of Cabra, also known as Kabara (near Timbuctu) suffered from various diseases caused by dishes so prepared that fish, milk,
227 butter and meat were all mixed up together.* It is not clear whether Leo Africanus has in mind several separate dishes, or whether he is speaking about only one dish prepared in this complicated way. It is possible that he means some sauce added

to porridge made of millet or rice, like those we mentioned when
228 discussing these foods.*

Unfortunately the Arabic medieval sources fail to give any information as to the way in which fish was prepared. Fresh fish was perhaps cooked with a sauce, fried in butter, or
229 simply roasted in the fire, as observed by Nachtigal in Bornu.* Dried fish was presumably made into some sort of pap or sauce,
230 like those which, according to the accounts of Barth* and
231 Nachtigal,* were very popular as an addition to farinaceous food among the people of Bornu. Nachtigal records that the smell of this kind of sauce was not pleasant to a European.

4: OTHER FOODSTUFFS

FATS

The medieval Arabic sources contain a number of references to the origin and consumption of edible fats used by the West African peoples; from these it can be seen that these peoples used both vegetable oil and butter as well as animal fat.

Vegetable oil

Let us start with vegetable oil, which must have been very important to the West African peoples, and particularly for those for whom the keeping of cattle and other domestic animals was only of secondary importance. Arabic authors mention three plants providing edible oil: shea butter (karite, karité), Elaeis guineensis (palm oil) and sesame.

Shea butter (karite), bot. Butyrospermum Parkii, also known as Bassia Parkii, is a tree of West African origin growing semi-wild in the savanna zone, wherever rainfall is not excessive. The tree produces egg-shaped fruit with a stone containing considerable quantities of oil, up to 60% of the whole. This is the principal source of vegetable oil wherever Elaeis guineensis palms do not grow. Shea butter is used in many ways; it is used to anoint the body, to light the room,
1 and above all as an important foodstuff.* The Arab author al-ᶜOmarī (fourteenth century) called this plant qarītī, which can also be read qarītē; this exactly corresponds to the
2 present-day Sudanic name of the plant and its oil, karite.*
3 Al-ᶜOmarī records:*

> The tree known as qarītī has a fruit resembling a lemon, which tastes like a pear. Inside there is a fleshy stone. They take this stone in a fresh condition, crush it and out of it comes something like butter which is used to whitewash houses, to put into lamps and to make soap. When they wish to make this butter edible, they cook it in the following way: it is put on a gentle fire, covered and left until it is boiling fast. The person preparing the oil looks after it with great care, mixing it gently several times with water. As a precaution he keeps it covered until the oil reaches the required consistency. Then it is cooled and used in food like butter. If the cover lifts suddenly, then the contents [of the pot] run out, fly away and reach the ceiling. It can happen, moreover, that the fire spreads and consumes the whole house, and

> sometimes it spreads so much that it burns the whole town. This butter burns up every skin [i.e. leather bottle] into which it is put, and can be stored only in receptacles made from pumpkins [calabashes].

This remarkably valuable information is given by al-ᶜOmarī from an account by one of his numerous and trustworthy informants to whom we have already referred. In this way he supplements the references contained in the description of the Sudan by Ibn Baṭṭūṭa, who records this oil during his stay in West Africa in 1352-3.* Ibn Baṭṭūṭa calls it ghartī (gharitī, gharitē). He states that this was the name given to a fruit resembling plums [peaches].* From the stone of this fruit, oil was extracted by grinding, and used in various ways — for cooking, for frying cakes made from ground-up nuts, to burn in lamps, to anoint the body and also, after mixing with earth, it was used as lime. Ibn Baṭṭūṭa goes on to say that this kind of oil occurred in the Sudan in large quantities and was easy to obtain. It was transported from town to town in large pumpkins [calabashes]. One such calabash filled with shea butter was received by him as a gift from a notable at the town of Mālī;* he also once received as a solemn gift from the king of Mālī, a piece of beef fried in this fat.*

In order to understand the preparation of shea butter as described by these Arab authors, we will quote some of the information on this subject (and on the uses to which shea butter was put) from European travellers of the eighteenth and nineteenth centuries. Here is an account by Mungo Park, who calls the fat (as well as the tree from which it is obtained) "shea-toulou" which ought to mean "butter tree":* "This commodity is extracted by means of boiling water, from a kernel of a nut . . . it has the consistency and appearance of butter, and is in truth an admirable substitute for it. It forms an important article in the food of the natives. . ." Further on, Mungo Park reports having seen in the Bambara country, people collecting the fruit of the shea butter tree, which was dried in the sun and boiled in water to produce a butter which could be likened to frozen Spanish oil, which would remain unsalted for a year without going bad, and was whiter, harder, and said even to be of better flavour than the best cows' butter.*

Caillié describes the production of shea butter by the Mandingoes of Timé (within the present Republic of Guineé),*

which he observed himself: the kernels [of the fruit of the shea butter tree — cé in the original] were exposed in the sun for several days to dry; then they were pounded to a meal in a mortar, taking on the colour of corn bran. After pounding, the mass was put into a large calabash; hot water was added to obtain a soft dough which was kneaded by hand. To make sure the dough was properly kneaded, more hot water was added; when the fat detached itself from the mass and floated in the water, more water was added repeatedly in sufficient quantity to make the butter float off from the remainder. Then the butter was scooped up with a wooden spoon and put into a calabash into which some water had been put. The butter so prepared was wrapped in the leaves of trees; in this way it could be preserved for two years without going bad.

11 According to Dalziel* the indigenous method of producing vegetable butter from the shea nuts consists in pounding the kernels, usually roasted, to a coarse pulp in a wooden mortar; the pulp is then ground on a stone into a fine oily paste with a chocolaty smell; it is not edible in this form, as it contains tannin. In Nupe and in the Yoruba country hot water is added to the pulp in a large pan, after which it is kneaded and washed in cold water. Butter is extracted from the resulting dough by boiling, the impurities being removed with the scum; then it is boiled a second time and put into a calabash to harden. Dalziel adds that in some regions of Senegal and also in Hausaland, unroasted shea nuts are used to produce vegetable butter; the butter is extracted by pounding them and kneading the pulp so obtained in cold water, by hand, until the emulsion breaks; the fat is then scooped off and boiled. According to Dalziel, the indigenous methods are inefficient, as they only permit the extraction of 25-27% oil from the kernels.

Imam Umaru, in his account of the material culture of Hausaland at the turn of this century, describes the production of shea butter in a different way from that recorded by al-ʿOmarī; he maintains that shea butter was not used in
12 Hausaland for food since it was considered injurious to health.*
13 According to Caillié,* the Mandingoes of Timé used butter made from ce (cf. Bambara and Malinke sé, sí) as a cooking fat, as an ointment, as an illuminant and as a medicine to cure pain

and wounds. Dalziel* confirms that shea butter is used for all these purposes, and adds that it is also used to grease the hair and to make soap.

References to shea butter reached Europe as early as the fifteenth century (first recorded in the account of his travels by the Genoese Malfante).* In 1477, in the Tuat oases, on the road from Gao through Takadda and Hoggar to Morocco (the same road that we find in Ibn Baṭṭūṭa's account) Malfante saw an edible oil of vegetable origin, imported from the Sudan, doubtless shea butter. The shea butter tree was described in 1799 by Mungo Park.* About the middle of the nineteenth century, shea butter was seen in the market-place at Timbuctu by Barth, who writes that "vegetable butter" was one of the principal articles there. He adds that this fat, known as bulánga (a name which was also used in the Tuareg language) was used for lighting; it was also commonly used, especially by the poorer inhabitants, for cooking, as a substitute for fat of animal origin.* According to another passage in Barth, the "butter tree" (bot. Bassia Parkii) was called kárehi (pl. kardēji) in Fulani, while the Hausa call shea butter mai-kadéña.* Let me mention, finally, that in the language of the Bozo, a fishing people on the middle Niger, shea butter is called ko-tie or ko-tye,* and that it plays an important part in the food of the Mandingoes and the other peoples of modern Mali. For example, in the district of Kita in the Sudan, shea butter, in loaves or in receptacles made from pumpkins (calabashes), is important both as a food and as a gift on the occasion of family festivities such as weddings.*

Let us go on to Elaeis guineensis, yielding palm oil. A description of this, included in the account of the town of Samaqanda in the western Sudan, can be found in the work of the Arab geographer and cosmographer ad-Dimashqī (first half of the fourteenth century). It reads as follows:*

> In this country a tree grows called rīkān [also zinkān] which is found also in Sūs al-aqṣā, with fruit like dates. When you peel it, you see the inside, very fat. For that reason they press oil out of it, which is used in place of olive oil and in place of butter, and which is considered better than either of these.

From this it is clear that ad-Dimashqī considered the West African tree described by him which produced edible oil to be

the same as the rīkān tree found at Sūs al-aqṣā in southern Morocco. This seems to be a misunderstanding; the West African tree has nothing whatever to do with the tree which produces edible oil at Sūs al-aqṣā. This tree is recorded by al-Bakrī, in
22 whose account it appears under the name harjān (also hargān),* by al-Idrīsī, who calls it argān which can also be pronounced
23,24 argān,* and by Ibn Sa^{c}īd who calls it arjān (argān);* the plant was also briefly described by Ibn Khaldūn (d. 1405) historian of
25 the North African countries.* When ad-Dimashqī compares the tree which grew in West Africa with argan (French arganier) from Sūs al-aqṣā, he is using the name of the Moroccan tree, though he mis-spells it rīkān. The two trees are quite different, as is apparent from Ibn Sa^{c}īd's account; he clearly states that the oil from the argān tree is not found anywhere but at Sūs al-aqṣā. Besides, according to ad-Dimashqī's account, oil from the West African tree was pressed out from the fat pulp of the fruit, whereas argān oil, according to al-Bakrī and also to al-Idrīsī and Ibn Sa^{c}īd, was produced only from the kernels of the argān fruit, while the pulp was used as fodder for goats, or was simply thrown away. Probably the tree growing at Samaqanda was the tree which produces palm oil — Elaeis
26 guineensis.*

This tree is one of the most important plants in West Africa, where it originated. It occurs in tropical Africa between 13^{o}N and 12^{o}S, growing wild in transitional zones between tropical forest and savannah, and also appearing in tropical forest following the penetration of man. This tree, which belongs to the palm family, has for centuries been a source of fat for the people of these areas. Oil is produced from oil palm by pressing it out of the fruit pulp, which contains from 50 to 65% fat, and even more in some cases. It is used at present to produce margarine and soap, as well as for other purposes. As well as the oil obtained from the pulp of the oil palm fruit, another kind of oil is produced from the kernels (which contain 44-53% fat), after removing the pulp and the shell of the kernel. This oil, which can be either white or yellow, has different properties from those of the pulp oil. It, also, is used in the production of margarine and soap. Palm oil is considered to be a particularly valuable
27 edible oil.*

It should be added that Barth observed oil palms near the town of Say on the middle Niger below Gao.* Palm oil is also popular as a food with the Wolof (e.g. from Guet N'Dar).*

The last plant giving edible oil attested in West Africa by the medieval Arabic sources is sesame (Sesamum L.), probably mainly a variety of S. indicum.* Its occurrence at Gao, capital of the Songhai state, is recorded by the Arab geographer az-Zuhrī, who wrote before 1150.* This plant, some varieties of which originate from West Africa, is still cultivated, mainly in northern Nigeria. Barth reports that porridge was made from sesame in south-eastern Bornu, at Logone, on the way from Bornu to Bagirmi.* Sesame cultivation in gardens in Bornu is attested by Nachtigal; according to him, sesame yielded oil and was also a foodstuff in its own right.* Barth and Nachtigal both also saw sesame at Bagirmi.* Sesame was also cultivated in Wadai, where, in the nineteenth century, it was among the principle edible plants. It was also cultivated in Darfur.*

Butter

Let us go on to examine butter made from animal milk (Arabic samn). This was consumed in large quantities, firstly by the pastoral Berbers nomadizing on the borders between the Sahara and the Sudan, as is repeatedly recorded by the medieval Arabic authors. Al-Bakrī (1067), describing the Berber tribes nomadizing in the Sahara, chiefly in the western part of the desert, i.e. in present-day Mauritania, says that their food consisted mainly of dried meat, ground, with melted animal fat or butter poured over.* Similarly, Leo Africanus records that dried meat was cooked there in milk and butter.* Further east, the Berber people of the Takadda (Teguidda) sultanate, in addition to produce such as millet and corn, also ate butter, which was purchased in exchange for copper bars. This we know from the account by Ibn Baṭṭūṭa, who adds that butter with milk and meat were the only foods which could be obtained on the way from Takadda to Tuat.*

In the parts of West Africa occupied by genuinely Sudanic peoples, butter was sometimes used in large quantities. Thus al-Qazwīnī, quoting information obtained from one of his principal informants on Africa south of the Sahara, ʿAlī al-Janaḥānī al-Maghribī, records that in the land of Takrūr on the Senegal, which he had visited personally, butter was

remarkably cheap, like honey and rice.* Leo Africanus reports that butter was also in common use at Cabra (Kabara) near Timbuctu.* The people of the banks of the middle Niger between Timbuctu and Gao also ate butter. Ibn Baṭṭūṭa, who went through these areas by boat, was able to buy the butter he needed in every village on the banks where he stayed overnight.*

We do not know from which domestic animals this butter was obtained.* It seems that the Berber nomads from the Sahara/Sudan borderlands made butter from the milk of goats, sheep and cows.* Unfortunately we have no medieval information on the subject, but it seems that the situation must have been similar to that in the eastern Sahara, where, according to al-Idrīsī (1154) the Saghwa (Saghawa) people, one of the Zaghāwa group, also ate camel butter.* It can probably be assumed that this was also the case with the Negro inhabitants of West Africa who kept camels, though we have no reference to confirm this.

An interesting piece of information about the butter used in the land of Mālī is given by al-ᶜOmarī (1342-9). He says that Mālī is a country where all food soon went bad, particularly butter, which decomposed and went bad within two days. "I must add", he says, "that this is not surprising, as their sheep are dirty animals feeding on refuse and dung. The remarkably high temperature in their country makes decomposition very rapid".*

As we can see from this text, the people of Mālī made butter from sheep's milk. This fact seems to be corroborated by the Genoese Malfante (1477) who, writing about the Sudan on the basis of information obtained during his stay at Tuat, records that "these people [the Negroes] have trees which produce edible butter . . . a seasoning as excellent as sheep's butter".* Butter produced from sheep's milk is known also from other parts of the world, including parts of Europe. In Poland it is found in some places, for example in the Tatra Mountains.*

Animal fat

The last source of animal fat used by the inhabitants of West Africa, as attested by the medieval Arabic authors, was the fat of animals slaughtered for food. Let me recall here that al-Bakrī, describing the life of the Saharan peoples, particularly in present-day Mauritania, records that their food consisted of dried meat, ground and with melted fat (Arabic shaḥm) or butter poured over.* Probably he means mainly the fat

of slaughtered sheep or camels.*

CHEESE

In the early Arabic sources for the history of West Africa there is no reference whatsoever to the production or consumption of cheese. This is in conformity with what was recorded by Mungo Park, according to whom neither the Foulahs (Fulani) nor the other inhabitants of that part of Africa knew how to make cheese.* The only exceptions were the Tuareg. For example, Rognon, discussing dairy farming among the Tuareg of Air, reports that they make cheese of goats' milk, very hard, which will keep for a long time. Also other Tuareg, for example the Auelimmiden, knew both hard cheese and cheese-curds (cottage cheese).*

EGGS

Medieval sources relating to the peoples of West Africa contain no references to the use of eggs as food. They were probably kept for hatching.*

HONEY

Even if we admit that sugar cane was known to the people of medieval West Africa (we will discuss this presently), it was certainly not cultivated there on a large scale. This made the role of honey, used to sweeten foods and to make various sweet, acid and alcoholic drinks, even more important. We have several medieval references to the consumption of honey. It was used to sweeten food in the land of Takrūr in present-day Senegal. The Maghribi traveller in West Africa, ʿAlī al-Janaḥānī, quoted by the thirteenth-century Arab geographer and cosmographer al-Qazwīnī, emphasizes the exceptional cheapness of honey in this country.* It is quite likely that it was from the very same place that honey was imported into the town of Audaghast, to the north-east of Senegal, on the southern borders of the Sahara. Al-Bakrī writes of this town (1067): "Here, also, there is honey in abundance, but it is brought from Negroland."* But Takrūr was not, I think, the only country from which honey was imported into Audaghast. We know from Ibn Baṭṭūṭa's account of his travels that in 1352, on his way from the town of Īwālātan (Walata) to Mālī, that he saw "trees of great age and girth; a

whole caravan can shelter in the shade of one of them. There are trees which have neither branches nor leaves, yet the shade cast by their trunks is sufficient to shelter a man. Some of these trees have rotted in the interior, and rain-water collects in them, so that they serve as wells and the people drink of the water inside them. In others there are bees and honey, which is collected by the people. I was surprised to find inside one tree which I passed, a man, a weaver, who had set up his loom in
55 it and was actually weaving there."* As we see, honey was also seen between Walata and Mālī, south-east of Audaghast; possibly it was imported from this area also. From Ibn Baṭṭūṭa's account, it can be seen that the local people either kept bees or took the honey produced by wild bees. The first seems more likely, especially in areas where bee-keeping has actually been attested, though admittedly only in the nineteenth century. Bee-keeping is recorded by Barth, who noticed, in part of the land of Musgu (in Bornu, in present-day Nigeria), numerous bee-hives made of hollowed tree-trunks put into the hollow interior of large
56 growing trees.* The Bayot and Tulup tribes of West Africa, as we know from other sources, use baskets hung in hollows of
57 growing trees, in place of hives.* Barth also describes bee-hives in the Kano area of Hausaland, in present-day Nigeria.
58 There they were made from hollowed-out branches of trees.*

I have mentioned before that honey was used to prepare a sour drink from millet. This drink was made from ground millet mixed with honey and sour milk, with water added, and was served at a formal reception in the town of Walata to merchants from
59 the Maghrib.* Ibn Baṭṭūṭa, who took part in the reception, describes it. It would thus seem that honey was also in use at Walata, a town on the southern edge of the Sahara, where perhaps it was brought from regions further south, such as Takrūr. Honey could also have been imported into Walata and the other northern areas of the state of Mālī from the neighbourhood of the town of Ghinea (Jenne) where, according to Leo Africanus, honey was
60 very cheap.*

As regards areas further east, we have only two references to honey. The first is the information given by Ibn Baṭṭūṭa: according to him, the people of the Songhai country on the Niger between Timbuctu and Gao prepared a drink from millet called daqnū (daqnō), the ingredients of which were water,

61 ground millet and honey, presumably of local origin.* The second piece of information, from Leo Africanus, refers to the province of Guber (Gobir) south-east of Gao, inhabited by the
62 Hausa, where, so he says, honey was abundant.*

Honey still plays quite an important part in the countries inhabited by the Hausa, where bee-keeping prospers, as we know, for example, from information obtained in the
63 province of Zaria in northern Nigeria* and in the Ilorin
64 province further south.*

Further east again, the use of honey is attested in the land of the Zaghāwa. We owe this information to al-Muhallabī: apparently he also includes Kānem under this name. He records that honey was added to the drink used by the king of this
65 state.* It is possible that the honey came from the neighbouring Bornu, which had long been under the political influence of the state of Kānem, and later merged with it to form a single state.

Despite information which seems to suggest that bees were deliberately kept, probably only a small proportion of the honey consumed during the Middle Ages by the people of West Africa came from bee-keeping. The greater part was supplied by wild bees, either wood bees or ground bees; the honey produced by them was collected into pots, or — less frequently — was kept in honeycombs. In Bornu during the nineteenth century, according to the account of the traveller Nachtigal, honey was highly esteemed as a delicacy, and was supplied in pots as
66 tribute to the royal court.* In other West African countries, honey as a food and as an addition to foods was no doubt equally important, all the more because it was available in large quantities.

SUGAR CANE AND SUGAR

I believe — in disagreement with suggestions by some other investigators — that at least some of the West African peoples knew sugar cane and the sugar obtained from it, during the
67 Middle Ages.* This plant, whose origins must be sought in India and Cochin-china, was introduced to Egypt, Spain and Sicily by the Arabs in the early Middle Ages. It is generally believed that sugar cane was introduced to West Africa by the Portuguese by way of Madeira, where sugar refineries were established as

early as 1452, and the Cape Verde Islands where sugar cane grew
68 in considerable quantities by about 1490.* This theory, however, is contradicted by the testimony of three medieval Arabic authors, az-Zuhrī (c. 1150), Ibn Sa^{c}īd (thirteenth century), and al-Qalqashandī (d. 1418); according to these writers, sugar cane was known in the eastern parts of West Africa long before it was introduced into Madeira and the Cape Verde Islands. Az-Zuhrī mentions the cultivation of sugar cane at Gao on the middle
69 Niger,* Ibn Sa^{c}īd states that sugar cane (Arabic qaṣab as-sukr) together with pomegranates and peaches, grew in plantations surrounding the town of Ney in Kānem (40 Arabic miles, i.e. about 80 kms from Jīmī, now Ngigmi, on the north-western shores
70 of Lake Chad).* The occurrence of sugar-cane plantations in
71 Kānem is confirmed by al-Qalqashandī.*

By the middle of the nineteenth century, the period of the first European reports about Kanem, from travellers such as Barth who explored areas near Lake Chad, there are no longer any reports of sugar-cane plantations at Kānem or Gao. On the other hand, Barth did notice sugar-cane plantations, and even a primitive sugar refinery, near the town of Sokoto in Nigeria,
72 half-way between Kānem and Gao.* The information given by Nachtigal is even more interesting. He says that on Lake Chad in the years 1870-3, among the tribute brought by his subjects to the King of Bornu in the town of Kuka (Kukwa), sugar was
73 included.* This information is very important, as Bornu in the Middle Ages and later was incorporated with Kānem in a single state, so that the cultivation of sugar cane might well have moved from the north-eastern shores of Lake Chad to Bornu on its southern shores. Barth adds that in some parts of the
74 Sudan, sugar cane grew wild.* Perhaps he was referring to former plantations, deserted and run wild.

If the information given by az-Zuhrī, Ibn Sa^{c}īd and al-Qalqashandī is correct, credit for the first introduction of sugar cane to West Africa should be given not to the Portuguese but to the Arabs. Perhaps it was introduced into countries south of the Sahara from southern Morocco, from the area of Sūs al-aqṣā, where there were large plantations as well as refineries already in the tenth and eleventh centuries,
75 as attested by the Arab geographer al-Bakrī (eleventh century).* On the other hand it is equally possible that sugar cane was

introduced to Kānem from Tunisia (al-Bakrī mentions plantations
76 of sugar cane at Tozeur and Qābis, the present Gabes),* through Tripolitania and the Fezzan, and the line of the Kawār cases, or possibly from Nubia, through Darfur and Wadai; in Nubia, early in the sixteenth century there were sugar-cane plantations and primitive refineries producing a dark sugar with impurities,
77 according to Leo Africanus.*

Mauny has suggested that the information given by az-Zuhrī about sugar-cane plantations in Gao is due to a misunderstanding, and that the author was referring to the plant known as burgu (Echinochloa stagnina), which also contains
78 some sugar.* This theory seems credible enough, the more so as, according to Barth, (who calls this plant býrgu), the people of the banks of the Niger near the towns of Kabara and Timbuctu
79 made a sweet soft drink from it, with water.* Speaking of Kānem, Mauny suggests also that it is not certain that it is really sugar cane which is referred to, but he does not say what other plant it could be with a sweet juice. While I do not share all the objections listed by Mauny, I would point out that the people who informed Ibn Sa^{c}īd and al-Qalqashandī may have confused sugar cane with sábade, sweet sorghum (Sorghum
80 saccharatum), which is cultivated in Bornu.* Barth noticed plantations at Ma-ssa (Masa), a village between Bornu proper and the Mandara province. The sweet marrow of sábada, in the form of long white rods served on plates made of straw, was offered to Barth by the Vizir of the sultan of Bornu. Barth says that
81 sábade could produce a large amount of sugar.* Nachtigal also mentions the cultivation of Sorghum saccharatum in Bornu and in Bagirmi; he states that it was only the stalks containing sugar
82 which were used.* The stalks of Sorghum vulgare, incidentally,
83 also contain a sweet liquid.*

SALT

Salt, so indispensable for a number of dishes in Europe and in the Muslim countries, was only consumed in small quantities by the medieval peoples of West Africa. Salt was quite a rarity and very expensive, as attested by nearly all the Arabic authors. The situation is described most vividly by Leo Africanus, recounting his personal observations:

In the greater part of Africa there is no other

> salt but that obtained from the mines, by digging underground galleries. . . There is grey salt, white salt and red salt. In Barbary it is found in large quantities; in Numidia [the northern Sahara] it is rather rare, but sufficient; while it is altogether absent in Negroland, particularly in inner Ethiopia [the southern part of West Africa and central Africa] where a pound of salt costs half a ducat. That is why the people of that country do not put it into salt-cellars set on the table, but when eating bread they hold a piece of salt in the hand and lick it so
84 as not to use too much.*

As can be seen, there was little local salt in West Africa, hence its high price. It was brought from various salt-mines, mostly far away. The medieval Arabic sources contain a good deal of information which enables us to establish the origin of the salt used in West Africa. According to Ibn Ḥauqal, the eminent Arab traveller and geographer who is said to have visited the western Sahara and the Sudan about the middle of the tenth century, there was a salt-mine at Aulīl on the sea coast one month's journey from the town of Audaghast and more
85 than a month from the town of Sijilmāsa.* This information is repeated from Ibn Sa^{c}īd by the geographer Yāqūt. According to al-Bakrī (1068) this place was on the sea shore, in a country inhabited by the Berber Juddāla tribe. From Aulīl, so this geographer reports, "caravans carrying salt depart . . . to all
86 the neighbouring lands".* Further information on this salt-mine is given by al-Idrīsī (1154). According to him, Aulīl was an island or peninsula (Arabic jazīra, here meaning a peninsula) in which there were famous salines (Arabic mallāḥa), the only ones attested in Negroland. He goes on to say that salt was exported to the whole of the Sudan by boats which came specially for it. These boats did the journey between the "island" of Aulīl and the estuary of the "Nile" (here meaning the Senegal) in one day; then they went upstream and unloaded the salt at Sillā, Takrūr, Barīsā, Ghāna (meaning here not the town itself, but the country of the same name, which extended to the banks of the Senegal during the Middle Ages), at the town of Wanqāra or Wangāra (tribal area of the Mandingoes), at Kūgha and beyond
87 that to all the towns of the Sudan.* This information bears witness to the remarkably extensive territory in which trade was carried on in salt from Aulīl, the salt reaching at least to the historic Ghāna on the east and to the Wangāra lands on

the upper Senegal and the upper Niger on the south.

The last piece of information about the salines at Aulīl is given by the geographer Ibn Saᶜīd (thirteenth century). According to him, near the estuary of the "Nile" (i.e. the Senegal) there was a "salt island" (or "salt peninsula"); in Arabic Jazīrat al-milh. At the southern end of the island, on the seashore, was the town of Aulīl whose people dealt in salt on a large scale. Ships loaded with salt went up the Senegal and supplied salt to the lands on the river. Ibn Saᶜīd also repeated from al-Idrīsī that salt from Aulīl was the only salt
88 found in Negroland.* According to Reinaud, editor of this passage from Ibn Saᶜīd's geography, the Aulīl of the Arab geographers is the Gandiole salines on the estuary of the
89 Senegal, on the borders of the Walo province.*

Salt from sea salines at the estuary of the Senegal continues to play a part of some importance in the food of the peoples of the western Sudan. Thus, for example, in the Sudan district of Kita, originally inhabited by Malinke and Bambara of the Mandingo group, and now occupied by Fulani, "sea salt"
90 is eaten.*

Another source from which the people of the western Sudan obtained salt, was the rock-salt mine at Taghāza, in the northern part of present-day Mālī. It is probably this place which is referred to by al-Bakrī, though he called it Tātentāl. According to al-Bakrī, this salt-mine lay twenty days' journey from the town of Sijilmāsa in south-eastern Morocco. The salt deposits were not very deep underground, in the form of blocks. Above the mine there was a stronghold with walls, spires, etc. (according to al-Bakrī) made of salt. From there, salt was transported to Sijilmāsa, to Ghāna (the historic land of that name) and to all the other countries of the Negroes. "Merchants constantly come to this mine", adds al-Bakrī, "which produces a
91 prodigious revenue".*

Al-Qazwīnī (thirteenth century) calls the mine Taghāra (instead of Taghāza), placing it south of the Maghrib, near the Ocean. One of his informants, al-Faqīh ᶜAlī al-Janaḥānī, visited it and told him that the walls of the town, as well as all the walls of the houses, were made of salt. The town was inhabited by slaves from the Berber Massūfa tribe. Merchants transported salt to various countries from this

92 place.*

An account of this mining settlement, said to have been built of salt, is also given by Ibn Baṭṭūṭa, who adds several further particulars from his personal observation (he
93 visited the place on his way from Morocco to the Sudan in 1352).* The mine "Tegaza" is also mentioned by Leo Africanus. In his time the salt was worked, not by the local people as previously, but by strangers who came with their caravans, extracted slabs of salt and sold them to other caravans. From Leo's account, it appears that salt was exported from Tegaza mainly to Tombutto
94 (Timbuctu) a town 500 miles away, where there was no salt.*

It is possible that the Tātentāl of al-Bakrī and the Taghāza of the other medieval Arab writers is the same as Ḥiṣn al-Milḥ (Salt Castle), a place built of rock salt, in the west of the Sahara, of which Ibn Saᶜīd says that this was the spot
95 where the caravans bound for Negroland loaded their salt.*

Mālī did not feel the absence of salt as keenly as the other West African countries, as the very active trade between Mālī and the Maghrib followed the caravan route which passed the mines at Taghāza. Al-ᶜOmarī, a mid-fourteenth-century geographer, stated clearly that the inhabitants of Mālī had
96 salt, whereas the peoples living farther south felt its lack.* In another passage, he says that salt was brought to the Sudan
97 (here: Mālī) by caravans from Sijilmāsa.* This information
98 occurs also in Yāqūt.* Of course, these caravans obtained their salt on the way, at Taghāza, though the author does not mention this. According to Ibn Baṭṭūṭa, on the merchants' route from Sijilmāsa to the capital of the state of Mālī, between Īwālātan (Walata) and the town of Mālī, the local people obtained salt
99 from travellers, exchanging pieces of rock-salt for foodstuffs.* Salt was imported from the north, from the "land of Islam", to the western Sudan, including the town of Ghāna, as is attested
100 by al-Qazwīnī,* who says that the place to which salt was brought was Bilād at-Tibr ("land of gold dust") — on the upper Niger and Senegal.

While the people of the present-day Senegal obtained their salt during the Middle Ages mainly from salines near Aulīl, and the people of the historic Ghāna and the former state of Mālī mainly, though not exclusively, from Taghāza (on the route to these two countries from Morocco), the Songhai

state (called after its capital Kaukau, Gogo or Gao in the Middle Ages) derived its salt from underground mines in the country called Tūtak, presumably north-east or east of Gao. Al-Bakrī, to whom we owe this information, adds that salt was brought from Tūtak to Tadmekka, six days' journey from Tūtak,
101 and only reached Kaukau or Gao from there.* But salt was also brought to the state of Gao from the west, perhaps from Timbuctu, where, as we have said, it was imported from Taghāza. We know this from Ibn Baṭṭūṭa's account; he reports that travellers going down the Niger from Timbuctu to Gao, himself included,
102 bought foodstuffs in exchange for salt in the nearby villages.*

It is very likely that salt was brought to Bornu and the neighbouring areas of present-day Nigeria from the Bilma salines in the land of Kawār; during the second half of the nineteenth century, 70,000 camel loads of salt were exported from Bilma every year, and this was the source of the salt used
103 in Bornu and in Agades.* Admittedly, we have no direct information to confirm this; but we know that an important trade route whose starting-point was Tripolitania and the Fezzan, and whose origin must apparently be traced back to remote antiquity, went past Kawār in the direction of Lake Chad and the Kānem-Bornu state in this area. So it is more than likely that the caravans which went from the Fezzan to Kānem and Bornu brought to these countries, and probably to neighbouring Hausaland as well, large quantities of salt which supplemented the import of salt to
104 these countries from the mines at Tūtak and Taghāza.*

I have already mentioned how high the price of salt was in West Africa in the Middle Ages. This is attested, for example, by a reference in al-Muhallabī (975-96): at the town
105 of Kaukau (Gao), salt was kept in royal treasuries (stores?).* And no wonder, since in some parts of West Africa salt was sometimes sold for its weight in gold. This was so, for example, in the land of al-Farwiyīn far to the south in West Africa,
106 according to information given by al-Bakrī.* Al-ᶜOmarī also records that salt was so scarce in the central Sudan that the merchants who smuggled it (evading transit dues) obtained for
107 it the same weight of gold.* According to al-Bakrī, the king of Ghāna levied a heavy tax on salt loads transported on donkeys — one gold dīnār on entering his kingdom, and two gold dīnārs on leaving it — presumably southwards, towards the "lands of gold",

where salt was even scarcer than in Ghāna.* The price of one camel load in the Sudan, including the land of Ghāna, was 200 to 300 dīnārs, as we know from Ibn Ḥauqal, who is said to have stayed there in about 953 or 954.* The prices of such loads quoted by later Arabic authors were considerably lower. Thus, for example, al-Qazwīnī says that such a load cost 100 dīnārs.* According to Ibn Baṭṭūṭa, at the town of Mālī, such loads brought in only 20 to 30 mithqāls, i.e. dīnārs.* At the town of Īwālātan (Walata), on the northern borders of the state of Mālī, the price was still lower, since a camel-load of salt cost barely eight to ten mithqāls.* However, Leo Africanus reports that, during his stay in Timbuctu, the price of a load of salt was again high, amounting to 80 ducats (probably dīnārs).* The same geographer also reports the price of salt at Gago (Gao) — one local ducat (dīnār) for one decima, equivalent to four gold francs for one kilogram of salt.*

As we can see, salt in the Middle Ages was a great rarity in West Africa, and the price was exceedingly high. Everything seems to point to the fact that salt was used only in very small quantities in the food of the local population, which is evident from the passage already quoted from the work of Leo Africanus.*

SPICES

The medieval Arabic sources give only scanty information about the cultivation and consumption of spices by the West African peoples. Among the various dispersed pieces of information, the most outstanding is a reference by Leo Africanus to the importation of Sudan pepper to Morocco. According to Mauny, what is meant is "Ashanti pepper" (Piper guineense) a variety noted for its hotness, and different from pepper proper (bot. Piper nigrum) from South-east Asia. "Ashanti pepper" was cultivated in some places on the Guinea Coast before the coming of the Portuguese in the fifteenth century; it was found, for example in the Niger delta, as reported by Münzer (c. 1500).*

It is quite probable that it was this same variety of pepper which was among the spices added to roast and boiled meat by the south Mauritanian Berbers. The use of these seasonings is attested also in another passage in Leo Africanus;

he records that, during his second journey from Morocco to Timbuctu (about 1512) on the Arawan plateau north of Timbuctu, he and the caravan he was with were entertained by a prince of the Zanaga tribe, who offered his guests meat "seasoned with
117 herbs and a large quantity of spices from Negroland".* It is probable that these spices, and perhaps Sudan pepper among them, were imported from the Guinea coast to the western Sudan proper, and from there via Timbuctu and Arawan to Morocco. It is possible that pepper was also cultivated in the territory of the West African Muslim states. Barth saw pepper plantations in the oasis of Badamuni (Badabuni), on the way from Bornu to
118 Timbuctu.* In addition to spices produced in West Africa, the people also used spices imported from North Africa, or rather, brought from more distant countries by way of North Africa. This is attested by Ibn Baṭṭūṭa who, describing the route from the oasis of Īwālātan (Walata) to the town of Mālī, says that a traveller through this area did not need to take with him either food or money, but only blocks of rock salt, glass trinkets, and certain aromatic substances (Arabic al-ʿiṭrīyāt, a word which also means both perfumes and aromatic herbs and seasonings), among which the local people favoured cloves (Arabic
119 qaranful) from south-east Asia.*

Ibn Baṭṭūṭa goes on to say that, during his journey from Timbuctu to Gao, which he made by boat down the Niger, he bought food in the nearby villages, giving in exchange salt,
120 glass ornaments and aromatic substances (Arabic al-ʿiṭrīyāt).* Presumably here, too, he is referring, partly at least, not only to perfumes but also to aromatic essences and spices used to flavour food. In Timbuctu, about the middle of the nineteenth century, both pepper and ginger were used in abundance, as
121 attested by Barth in his description of the market-place there.*

KOLA

Apart from alcoholic drinks, the only stimulant recorded in the Middle Ages as known to the West African peoples (or so it appears at least from the Arabic sources) was the kola nut
122 (bot. Cola spp.).* Mauny assumes that kola, a tree of West African origin, was the only fruit tree cultivated before the coming of the Arabs. We know two species, Cola acuminata cultivated on the coast of Lower Guinea, from the Volta river

in the west to Gabon in the east, and Cola nitida which occurs further west, from the area of the present-day state of Ghana to Sierra Leone. It was mainly the latter species which was the object of trade in West Africa, while C. acuminata served only
123 for local use.*

The kola nut has mildly stimulating properties, and the people of West Africa were (and are) very fond of chewing it. According to an Arabic pharmaceutical treatise from the eighteenth century, the kola nut was "among the most sought-
124 after foods upon the royal tables".*

The oldest attested information on the kola nut and its consumption in West Africa comes from Leo Africanus (1526); according to him a tree grew near the river Niger in the Sudan which produced fruit of a slightly bitter taste, in appearance very like the chestnut, and which in the native tongue was
125 called goro.*

Certain social and ritual customs are also associated with the use of the kola nut. For example, the Wolof in Senegambia offer it to the father of the girl they propose to marry; it is similarly distributed at funerals, as alms. The
126 Wolof import kola from Sierra Leone.* A similarly important part is assigned to the kola nut on various solemn occasions in
127 the present-day state of Mali.* In Hausaland, too, and also in Bornu, kola nuts, much used as stimulants, replace both tea and coffee. The local Arabs call it qahwat as-Sūdān ("coffee of the
128 Negroes").*

BEVERAGES

Water

Obviously, the most important part among the beverages used by the West African peoples (and by nearly all the other inhabitants of this earth) must be assigned to water. However, during the Middle Ages, water was not regarded as the most salubrious drink in West Africa. Ibn Baṭṭūṭa, for instance, declares that plain water disagreed with the people of the banks of the Middle Niger, and that for this reason they used various other
129 beverages.* Nevertheless, water was also in use; sometimes in dry country, even rainwater was drunk for lack of other sources. The same Ibn Baṭṭūṭa, describing his route from Īwālātan (Walata) to the town of Mālī, reports that he encountered big

hollow trees forming a kind of cistern where rain-water
130 accumulated. This water was drunk by passers-by.* Al-ᶜOmarī, who wrote a few years before Ibn Baṭṭūṭa, reports that the people drank water out of wells they dug, or from the river
131 Nile (i.e. Niger).* As to the water drunk at Takadda (Teguidda), Ibn Baṭṭūṭa asserts that its taste and colour were altered as a
132 result of it passing through copper mines (i.e. deposits).* Another interesting fact about the obtaining of water in desert territories comes also from Ibn Baṭṭūṭa: describing the wide lowland plateau extending to the north of Īwālātan (Walata), he notes that the local nomads of the Berber Massūfa tribe hunted "wild oxen" (antelopes), killed them, and found water in their stomachs. Our traveller himself saw a man of the Massūfa tribe
133 drinking such water.*

Travellers crossing the Sahara also drank on occasion water stored inside a camel. The earliest information about this custom, which has often been thought to be only a fairy-tale, comes from Yāqūt, who describes it in his account of merchants going from Sijilmāsa through Ghāna to the "land of gold dust", probably to the town of Ghiyāro (near present-day Kayes). "These travellers", reports the Arab author, "cross deserts on their way where the samum winds blow, which dry up the water in their gourds. Therefore they have recourse to a certain device. . . They take along with them some extra camels which do not carry any load. These they force to drink once and again until their stomachs are full. Then the camel-drivers drive them (unloaded). When the contents of their gourds [the travellers' gourds] dry up, and they want water, they kill one camel and save their lives by what they find in its stomach
134 . . ."*

Milk

Apart from water, a widely popular drink with the medieval people of West Africa, whether of Berber origin or purely Sudanic (black), was milk: cows' milk, camels' milk, goats' milk and probably sheep's milk as well, drunk fresh (sweet) and also, more frequently, in the form of sour milk. In this respect, the situation in the Middle Ages was probably very
135 much as at present.* Nowadays, the fresh and sour milk of cows, camels, goats and sheep is used in quantity by both the Negro and the Berber (Tuareg) peoples of West Africa. We need only

mention the important part played by milk in the food of the
136 Wolof of Senegal, in Hausaland, or further north, in the Sahara.*

The medieval Arabic authors who wrote about West Africa give abundant information about milk, both in general and in particular. For example, according to al-ᶜOmarī, milk was drunk by the people of the three Berber states lying north and east of the Sudanic kingdom of Mālī — Audaghast, Tadmekka and
137 Aïr.* The people of the Berber sultanate of Takadda, as attested by Ibn Baṭṭūṭa who had visited the country, were also fond of
138 drinking fresh milk, particularly in the evenings.* Leo Africanus reports that milk was used by the people of the Sudanic town of
139 Ghinea (Jenne), people of incontestably Negro origin.* Very probably the Berber peoples and also some of the Negroes living in the Sudan-Sahara borderlands are referred to in a remark by al-Bakrī (1068) about "all the desert peoples" (i.e. all the inhabitants of the Sahara): he says that milk was drunk instead of water, of which they sometimes did not drink a single drop
140 for months on end.*

Passing to more detailed information, it must be recorded that the Berbers from Takadda drank various beverages including fresh cows' milk (Arabic halīb). This is attested by Ibn Baṭṭūṭa, who was a guest at one of the nomadic camps of the sultan of this small state; the sultan sent him a whole roasted
141 ram and a jar of fresh cows' milk.* According to another passage in the same traveller's account, the Berber Bardāma (Berdāma) tribe, nomadizing to the east of the town of Kaukau (Gao) on the way to Takkada, also drank cows' milk: the women were partic-
142 ularly fond of drinking it.* As to the Sudanic people of purely Negro origin, we may recall the information recorded by al-Idrīsī (1154), that the people of the town of Malal (Mallel, Mellel, i.e. presumably Mālī) drank the milk of camels and
143 goats.* Goats' milk was also drunk by the people of the town of Guaden (Wadan, Ouaden) on the north-eastern border of the Songhai state, as recorded by Leo Africanus, who passed through this place in the course of one of his journeys from Morocco
144 to the Sudan.*

As regards the drinking of camels' milk, apart from the information about the drinking of this milk at the town of Malal which we owe to al-Idrīsī, the most important reference is that in Leo Africanus. He reports that the Saharan nomads fed

chiefly on the milk of their camels, drinking every morning a large bowl of camels' milk, freshly milked and still warm, and
145 in the evenings eating dried meat cooked in milk with butter.* Nowadays, camels' milk is a luxury drink for the people of the
146 Sahara;* it is drunk by the Tuareg, and also by the people of
147 the Lake Chad area, where Barth records the custom.* Barth states that he became accustomed to drinking camels' milk, which he found better and more wholesome than cows' milk. It must be added, however, that the Fulani — herders of cattle —
148 abhor camels' milk.*

Fairly frequent references to sour milk (Arabic laban), drunk both by the Negro and by the Berber peoples of West Africa, are to be found in the medieval Arabic authors. For example, Ibn Baṭṭūṭa, describing his journey in 1352 from Iwālātan (Walata) to the town of Mālī, records that the traveller arriving at the villages on the road was met by Negro
149 women selling various local products including sour milk.* The Negro people of the town of Zāfqū, further south-west, were snake-worshippers and brought as offerings to the snakes jars of sour milk and of some other mysterious "drink" (sharāb in Arabic), in all probability an alcoholic one. This information
150 is recorded by al-Bakrī (1068),* who, though he did not go to West Africa himself, nevertheless records some genuine and very accurate information about this area which he obtained from various travellers and merchants. At the town of Mālī, after the mourning ceremonies which took place at the court of Mansā Sulaymān, the avaricious sultan of the state of Mālī, ceremonies in which Ibn Baṭṭūṭa also took part, the ruler sent
151 to our traveller a gift of a jar filled with sour milk.* The same traveller records elsewhere that sour milk was a very
152 common drink at the town of Kaukau (Gao) on the central Niger.* Sour milk was also used in quantity by the pastoral Berbers of the kingdom of Tadmekka, north-east of Gao; this is attested in the eleventh century by al-Bakrī, and three centuries later
153 by the cosmographer ad-Dimashqī.*

Ibn Baṭṭūṭa, describing his journey through areas on the middle Niger between Timbuctu and Gao, inhabited, as already mentioned, by the Sudanic Songhai people, states that among the local beverages was one consisting of sour milk
154 diluted with water.* This drink has remained in use by the

Tuareg up to modern times, for example by the Berber Auelimmiden, north-eastern neighbours of the Songhai. In the small vocabulary of the language of this tribe, compiled about the middle of the nineteenth century by the German traveller Barth, the drink
155 made of sour milk mixed with water is called akraihéme.* (Incidentally, this drink is known also to peoples outside the African continent; for example, it is used in some parts of Poland, in the Tatra Mountains.)

On the other hand, we look in vain for information about any other kind of drink made from milk in the medieval Arabic sources. Nevertheless, such drinks are now in use among the peoples of West Africa. For instance, the West African
156 Bayot people now drink milk mixed with lemon juice.*

Water and honey

Ibn Baṭṭūṭa, describing the countries on the middle Niger, and particularly the Timbuctu-Gao region, mentions another kind of
157 drink used there — water sweetened with honey.* It is hard to discover whether he is referring to a simple sweet drink consumed directly after preparation, or one which had been subject to some sort of fermentation, acid or alcoholic, of long or short duration. Unfortunately we have no information about the drinking of honeyed water by present-day Songhai. I think, however, that the drink may have continued in use there, as it did on the borders between Bornu and Adamawa, at the eastern
158 boundary of present-day Nigeria, in Barth's time.*

Drinks thickened with cereals

Let us now proceed to other, more complicated drinks which were once used in West Africa. It seems that quite an important part was played by various kinds of drinks thickened with
159 cereals.* According to the information given by the medieval Arabic authors, these were drunk (or sometimes eaten, when they were thick enough) not only by the genuine Sudanic peoples, but sometimes also by the Berbers (Tuaregs), nomads in the northern parts of West Africa adjoining the Sahara. In the medieval Arabic sources we can find information about several varieties of these thickened drinks.

The information about a thickened drink used by the Berbers of the Bardāma tribe, living as nomads to the east of the town of Gao, we owe to the Arabic traveller Ibn Baṭṭūṭa, who encountered them in 1353 in the course of his journey from

Gao to the town of Takadda; he records that the main drink used by these Berbers, apart from fresh milk, a drink typical of the Berber-Tuareg nomads, was "crushed millet which they drink in
160 the mornings and evenings, mixed with water without boiling".* Presumably the drink described by Ibn Baṭṭūṭa was similar to that drunk in Bornu (north-eastern Nigeria) described by the German traveller Nachtigal, to whom we have made frequent references in the course of this study. Nachtigal records that thirst was quenched in Bornu very largely by a drink made of water with the addition of coarsely crushed dukhn and durra grain (kinds of millet), which produced a most pleasant and
161 refreshing drink.* This last remark leads us to assume that he is referring to a sour drink after a short period of fermentation, just like the braga drink. Probably this is the same drink as they had in Wadai, which Nachtigal calls "saures Getreidewasser" (sour corn-water). According to Nachtigal, this drink, which tasted sharp and sweet, was made from water with
162 corn or Guinea corn (Sorghum).*

Another drink similar to the one just described was that made by the Songhai on the Niger. This also is attested by Ibn Baṭṭūṭa, who encountered it during his journey from Timbuctu to Gao in 1353. At a feast prepared in his honour by the governor of a place on the Niger, who was called Farbā Sulaymān, Ibn Baṭṭūṭa records: "We were served with a drink called daqnū [also known as daqnō]; this was water with crushed millet, mixed with a small amount of honey or sour milk. It is
163 drunk in place of water, as plain water disagrees with them."*

The word daqnū (daqnō) is the Arabic transcription of the Songhai dakno, which is still used for this kind of drink. Barth drank it also near Timbuctu, and describes it: it was composed of crushed millet with the addition of a small quantity of honey, or, if there was no honey, of the juice of the baobab fruit. Obviously the main ingredient was water, which Barth forgot to mention in his description. According to him, dakno was a drink in common use with the Songhai. Barth adds that this drink was not so good as his favourite (Tuareg?) drink made of water with cheese and dates, which he frequently
164 commends in the course of his work.*

It may also be added that a drink of the dakno type was also a favourite with the Zaghāwa. The Arab geographer

Yāqūt (early thirteenth century), quoting a passage from the now-lost geographical treatise by al-Muhallabī (who wrote before 996), reports that the drink of the king of the Zaghāwa was made
165 from millet "fortified" with honey.* It is thus a drink exactly like the dakno of the people of the banks of the middle Niger; it would seem, moreover, that the word "fortified" implies a sourer drink, or even one containing some percentage of alcohol.

It is quite probable that the drink made of millet "fortified" with honey mentioned by al-Muhallabī, is the same as the alcoholic drink formerly used by the people of the land of Bambuk, as attested in the account of his travels by Golberry (1785-7). This country included areas between the upper Senegal and its tributaries the Faleme and the Bafing, and was part of the "land of gold dust"; the people belonged to the Mande or Mandingo group. According to Golberry, the people of Bambuk made this alcoholic drink as follows: they put millet into an earthen pot filled with water, and kept it there until it turned sour. Then they added as much honey as the pot could hold and exposed it to the sun for ten days. After that time, they filtered the contents through a sieve made of leaves, obtaining
166 a strong mead with a very pleasant flavour.*

The dakno drunk in the land of the Songhai, as attested by Ibn Baṭṭūṭa, contained honey or sour milk; another drink of the same kind was served to this traveller at a solemn reception given by the governor of Īwālātan (Walata) on the northern borders of the state of Mālī, containing (in addition to water, which he fails to mention) "crushed millet mixed with
167 a small amount of honey and sour milk".* This is rather like the drink in use at Agades, known as arigira; its ingredients were millet flour mixed with water, to which honey, sour milk
168 and pepper were added.*

Somewhat similar to dakno, but more elaborate, was a drink popular in Bornu, where, according to Nachtigal, the people in the second half of the nineteenth century drank a "highly spiced" drink made of rice flour, milk and honey — to
169 which water had evidently been added.*

Millet beer

The medieval Arabic authors, describing the drinks used by the peoples of West Africa, repeatedly mention the local alcoholic drinks, and firstly a millet beer, a very primitive drink which

no doubt was produced by further fermentation of the sour millet drink mentioned above. We owe the reference to this drink to al-Idrīsī. This author, who has left a very interesting and relatively detailed account of Africa south of the Sahara, based on information derived from various, but unfortunately anonymous, travellers and merchants, reports that the people of the Sudan, and especially of its western part (i.e. the northern
170 part of West Africa) "prepare an alcoholic drink from millet".* This information has been corroborated by the observations of nineteenth-century European travellers, and also by the situation today. As to the method of preparing beer from millet, the Wolof of Senegambia, for example, until recently prepared it by adding boiling water to millet flour, filtering it and subjec-
171 ting it to fermentation.* This kind of beer is known throughout the whole of the western, central and eastern Sudan as dolo, kimbíl, merisa etc. According to Barth, who tasted it, it is
172 rather unpleasant and quite unlike European beer.*

The reference in al-Idrīsī to beer produced from millet is by no means the only information to be found in the medieval Arabic authors about the alcoholic drinks used by the people of West Africa. For example, the Arab geographer al-Bakrī, who writes in the second half of the eleventh century, says in his account of the state of Ghāna in the western Sudan (the historic Ghāna, in southern Mauritania and the north-western part of modern Mālī) that the heathen population of these areas brought offerings to their dead, including alcoholic drinks
173 (Arabic al-khumūr).* The same al-Bakrī, writing of Zāfqū, a town somewhere in the basin of the middle Senegal, near the borders of the historic Ghāna, reports that the Negro people of this town worshipped a large snake to which they brought
174 offerings of jars filled with sour milk and sharāb.* This word is the Arabic for drink in general; but it is often, perhaps mainly, used to mean wine and other alcoholic drinks, and it is probably with this meaning that al-Bakrī is using the word.

Mead

The question arises, what alcoholic drinks the medieval population of West Africa could possibly have known. I do not think I can be mistaken in assuming that this word principally
175 means mead.* This drink could have been produced easily by fermenting a mixture of honey and water, a mixture which was

well known to the peoples of West Africa in former times (and still is). Although we have no information about the making of mead in West Africa during the Middle Ages, we know that it is quite a common drink there now, and has been for a long time. The Wolof, for instance, prepare mead by mixing honey and water and exposing the combination to the heat of the sun for
176 fermentation.* In addition, the drink is also known from other
177 parts of West Africa, for example from Mālī.* Like millet beer, it plays an important part on various solemn occasions, and is often offered as a gift. Nor is mead unknown to other peoples of Africa: from al-Bakrī we know that in the eleventh century, this drink was made in southern Morocco, in the country called
178 Sūs al-aqṣā.*

Palm wine

In addition to mead, it seems that the earlier peoples of West Africa knew palm wine, similar to that used by, for example, the Senoufo, and which is drunk to this day by the people of
179 Senegambia.* We are referring here to the fermented sap of the palm tree Elaeis guineensis, which occurs in large numbers in the south of Senegal (in Casamance); large groups are also
180 found on the coast of Cape Verde.*

5: UTENSILS

In conclusion, we will say a few words about the information transmitted to us by the medieval Arabic authors on the utensils used by the earlier peoples of West Africa to cook, eat and store their food and drink. The information, although rather scarce, is a valuable complement to that obtained through archaeological research.

COOKING UTENSILS

Let us begin with cooking utensils. There is only one reference to them in the Arabic sources; this is the information contained in the geographical treatise of al-ᶜOmarī (1342-9), in the passage relating to the preparation of edible fat from shea
1 butter (qarītī, karītē) in the land of Mālī.* As already mentioned in the chapter on fats and oils, this kind of oil is slowly boiled under cover over a moderate fire. We do not know, of course, whether an earthenware or a metal vessel is meant; but it can be seen from al-ᶜOmarī's information that lids were in use.

DISHES AND PLATES

The information given by the Arabic authors on dishes and plates is rather more extensive. In the first place, we should mention Leo Africanus's account of the golden dishes and cups from which the King of Borno (Bornu) in the Lake Chad area used
2 to eat and drink.* It is highly probable that other Sudanic rulers also used such dishes, since gold occurs in West Africa in very large quantities. But these were exceptional cases: usually calabashes were used as dishes. An interesting account of such dishes is given by Ibn Baṭṭūṭa, recounting his observations in the Sudan, in the middle Niger basin, in 1352-3. He says that the people of these areas made dishes of calabashes (qarᶜa in Arabic, which actually means "pumpkin") noted there for their exceptional size. The calabash was divided in half, each half being made into a round bowl, with fine decoration incised on them. Ibn Baṭṭūṭa adds that whenever a Sudanic man set out on a journey, he was accompanied by slaves of both sexes, carrying "dishes for food and drink made of calabashes"

(Arabic qar^{c}a).* Ibn Baṭṭūṭa encountered these dishes for the first time at Īwālātan (Walata), a town on the northern borders of the state of Mālī. A reception was given for those riding in the caravan from Morocco, Ibn Baṭṭūṭa among them, and a thickened drink was served in a round bowl made from half of a hollow calabash, from which they all drank.* Another calabash of this kind, filled with sour milk, was presented to our traveller as a gift at the town of Mālī.* Possibly calabashes were also used to produce the large round bowls used by the Berber (Tuareg) tribes of the Zanaga (Zenaga), Guenziga (Wenziga) Terga and Lemṭa, and also the Berdeua (Teda), and from which, according to Leo's account, fresh milk was habitually drunk in the morning. As well as these big bowls, small drinking cups were also used, presumably also made from calabashes.*

RECEPTACLES FOR FOOD STORAGE

Here also, vessels made from calabashes were much used. According to al-^{c}Omarī, the vegetable butter made from qarītī (karītē) oil was kept in receptacles made from calabashes; this could not be kept, he records, "in skins", i.e. in leather bags, as it "burnt them up".* Ibn Baṭṭūṭa, recounting how shea butter was offered him by a notable of the town of Mālī, records that it was contained in a "pumpkin" (Arabic qar^{c}a), evidently a receptacle made from a calabash.* From al-^{c}Omarī's account of the methods of keeping shea butter, it can be seen that the people of the state of Mālī also used leather bags to keep food in.* Was leather also used to make the big sacks (Arabic ghirāra) in which fūnī (fonio, a kind of grain, see above) was kept, and which were offered to Ibn Baṭṭūṭa in Mālī?* It is hard to say.*

CONCLUSION

So we come to the end of our study of the information about the food of the West African people, both of native Sudanic origin, and the Berber immigrants — information which we owe to Arabic authors who wrote from the early tenth century to the early sixteenth century. It can be seen that the information is fairly detailed and thorough, particularly on the basic produce of vegetable and animal origin from which foods and drinks were made, though it is unfortunate that beverages are only rarely described in medieval Arabic sources. Obviously, most of this information is of a somewhat fortuitous character; yet it allows us to see approximately what the food of the population of West Africa was, prior to the great changes which took place in the agricultural economy of these countries during the sixteenth to eighteenth centuries. These changes were partly a result of the new contacts between the Guinea coast and the countries of South-east Asia, partly of the evolution and progress of Portuguese trade, but most of all, of contacts with the newly-discovered lands of America, South America in particular. These factors resulted in vital changes in the daily diet of the West African peoples. In particular, plants of American origin, such as maize, cassava and groundnuts, to mention only the most important, increasingly displaced millet, yams and the Bambara groundnut.

Clearly, a full picture of these changes can only be presented when the medieval and later sources of European origin (up to the seventeenth century) have been examined, and conclusions have been drawn from archaeological work carried out in West Africa. This, however, is beyond the scope of our present work.

NOTES

All works appearing in the notes are cited by short title: their full publication details are to be found in the Bibliography, pp. 227-41

The following abbreviations are used in the Notes:

GAL Geschichte der arabischen Literatur

IFAN Institut Français (later, Fondamental) d'Afrique Noire

SOAS School of Oriental and African Studies

INTRODUCTION

1 E.g. Fernandes, Description; Pereira, Esmeraldo de situ orbis.

2 Youssouf Kamal, Monumenta cartographica. We have also a critical edition of Arabic sources for the history of sub-Saharan Africa with a Russian translation, up to the first half of the twelfth century: Kubbel, Matveev, Arabskiye istochniki.

3 It was only after the Polish version of the present book had been completed, that I was able to study Mauny's important and learned Tableau, where the author gives a very accurate review of the early Arabic sources relating to food collecting, hunting, fishing, agriculture and animal husbandry as practised by the earlier peoples of West Africa. But despite the publication of this book, I decided to re-examine the subject in the present, English, version of my book partly because the question of the actual food eaten by the peoples of West Africa is only briefly dealt with by Mauny; it is true that in the present work I also refer to questions discussed by Mauny, such as food collecting, hunting, fishing, agriculture and animal husbandry — the sources of food for the peoples of the area. This can, I think, be covered by the Latin saying: Si duo faciunt idem non est idem. In this English version I have attempted to make use of the relevant passages in Mauny's work, which I consider to be of the highest value, and excellently supported by the sources. For obvious reasons, I have had to do this in the notes. For the same reasons, I have made use in the notes of information contained in Gast's valuable work Alimentation. This is very important for the study of the food of the Tuareg, and indeed of all the peoples of the Sahara. Unfortunately I was not able to see it until after this book was finished.

4 The earliest Arabic sources on West Africa go back to the last decades of the eighth century. I refer here chiefly to the brief but important description of Negroland

(Bilād as-Sūdān) by the Arab astronomer and geographer al-Fazārī, and quoted by al-Mas'ūdī (who wrote in 956) (see al-Maçoudi, Prairies, VIII). Unfortunately, neither this passage nor the available Arabic sources from the ninth century A.D. contain any information about the food of the peoples of West Africa. References to food appear first in the tenth century.

5 Some information from medieval Arabic sources about the food of the earlier peoples of West Africa is given by Mauny in his "Notes", which has an exhaustive bibliography of the subject. Mauny deals mainly with edible plants cultivated in West Africa, to a total number of 43 (including 13 plants of American origin), and has found references to the predominant part played by the local plants in Arabic sources, which he quotes without discussing them in detail.

6 One of the most important works on the subject is Dalziel, The useful plants. In addition to Dalziel's work, I should mention the numerous studies by the French scholar Portères, including the paper on "Vieilles agricultures africaines".

7 It is generally believed that the former inhabitants of the Tichit area on the south-eastern borders of the modern Republic of Mauritania were of Negro origin. Probably the same is true of the ancestors of the fishing tribes living on the coasts of Mauritania, now known as the Imraguen; they later adopted a Berber language and were incorporated into the Berber Zanaga tribe. See Fernandes, Description, 151, note 140, and Revol, "Les fractions d'Imraguen", 182-7.

8 These influences, which reached the eastern shores of Lake Chad in the tenth century, were discussed at the SOAS conference, London 1961, by A. J. Arkell, well-known as a historian of the Eastern Sudan "The influence of Christian Nubia".

9 This route, recorded by Ibn al-Faqīh al-Hamadhānī (c. 903), went through Marinda (Maranda) in Aïr and the town of Kawkaw (Gao). See Ibn al-Fakîh, Kitâb al-Boldân, 68.

10 The existence and course of a road joining the territory of the state of Mālī with that of the present-day Republic of Ghana (and particularly with the Portuguese trading settlement at Elmina, founded in 1471), have been established by Wilks, who presented the results of his research in a paper read at the SOAS conference, London 1961 ("A mediaeval trade-route"). He concludes that as early as the fifteenth century, Mande merchants (Dyula or Dioula), starting from the important town of Jenne, had begun to penetrate the country to the south. Successive stages in their migration were: Bobo-Dioulasso; the town of Kong; the former town of Begho in the area occupied by the Nafana people. The two last are said to have been founded by about A.D. 1400. Begho was connected with Elmina by a forest path down which trading caravans could travel. Probably this was the way along which the

Portuguese sent a delegation from Elmina to Mālī between 1481 and 1485. The Portuguese met Mande merchants at Elmina when they came to found their own colony there (Wilks, "A mediaeval trade-route").

11 Fernandes, Description, 60-3.

12 Expeditions of this kind, organized by Garamantes of Fezzan against Troglodyte Ethiopians, probably ancestors of the present Teda (Tebu), are mentioned as early as 450 B.C. by Herodotus: see Gsell, Textes, 147-54; Bovill, The golden trade, 34. Gsell thinks that the Troglodyte Ethiopians described by Herodotus are the Teda (Tebu) of Tibesti. In my opinion, however, the name may also refer to the ancestors of related tribes inhabiting Kawār and Borkou (Borku). The Teda still live in caves; see Yver, "Tubu", 886.

13 On the occurrence of the camel in North Africa in Roman times, see Demoughot, "Le chameau", 209-47.

14 I am referring to two Arab war expeditions. The first was led by General ʿOqba ibn Nāfiʿ, who in 666-7 set out from Tripolitania via the town of Jarma (the ancient Garama) in the Fezzan to the Kawār oases, and went far south into this chain of oases. Evidently he went in the direction of Kānem, following in the path of earlier expeditions of the Garamantes, who had penetrated these areas in antiquity: see el-Bekrī, Description de l'Afrique, Arabic text, 12-14, translation 33-5. The route followed by ʿOqba ibn Nāfiʿ was known to the Romans, and probably to their Byzantine successors also. One of the kings of the Garamantes even used it to lead a Roman army; according to Ptolemy (second century A.D.), these troops started from Leptis Magna (Lebda) on the Tripolitanian coast, in the direction of the town of Garama, i.e. Jerma in the Fezzan; four months after leaving Leptis Magna, they reached the land of Agisymba where the rhinoceros lived (see Gsell, Textes, 150-1). Undoubtedly these troops must have followed the chain of the Kawār oases to the shores of Lake Chad, where the rhinoceros is still found. According to another passage in Ptolemy's geography, the Garamantes extended their rule over the Sudanic territories; this presumably took place towards the end of the first century A.D. (Ibid. 151). So it is possible that the descendants of these Garamantes led the Arab conquerors in the year 666-7, along a route which had long been familiar to them. The second expedition was led by ʿAbd ar-Raḥmān ibn Ḥabīb ibn Abī ʿOthmān, who went from the land of Sūs in southern Morocco to Negroland, after 734-5, probably making for the Senegalese coast or the town of Ghāna. (On this expedition, see Marquart, Benin-Sammlung, passim.) This route, also, was well known to Roman traders or to the merchants of classical Mauritania which was in close touch with the Roman Empire. It probably passed through Akjoujt in the present-day Republic of Mauritania, where two Roman coins from the second half of the first century B.C. and from the first years of the present era have recently been

discovered (see Ziegler, Hallemans, Mauny, "Deux monnaies romaines".

15 On the part played by the Berber centres of trade with the western Sudan, see: Lewicki, "Voyages des commerçants" and idem, "L'état nord-africain de Tāhert".

16 Delafosse, "Takrūr".

17 El-Bekri, Description de l'Afrique, Arabic text, 175-6; translation, 328-31.

18 The name for the Mande in the language of the Moors, and in Sarakole (Soninke), Songhai and Hausa, at the present day, is "Wangara". The word is derived from the name Gangaran, used by the Mandingoes for two gold-bearing regions: the lower Faleme, and Bambuk. See Labouret, "Les Manding", 30.

19 The name Malinke is of foreign (Fulani) origin: see Labouret, "Les Manding", 30. The Malinke, like other Mandingoes, call themselves: Mandeng, Maneng, Mande, Mane, Manding, Mandi, Mani (ibid., 27).

20 Al-Jaᶜqūbī, Historiae, 219; cf. also Marquart, Benin-Sammlung, LXXVII and XCII. Al-Yaᶜqūbī wrongly places this kingdom near Kānem. The Arabic word Mallal (also Mallel) is one of the names given to the Mandingo people in the Fulani language (Peul): see Labouret, "Les Manding", 27.

21 El-Bekri, Description de l'Afrique, Arabic text, 178, translation, 333.

22 This word is also derived from the Fulani, where it means the Mandingoes. The Berber name of the Mandingoes: Mel, Mellit, and also the name given to the state of Mālī in the medieval European maps: Melli (e.g. on Angelino Dulcert's chart drawn in 1338), is another name for the Mandingoes in Fulani. See Labouret, "Les Manding", 27.

23 Al-ᶜOmarī, Masālik, 52, footnote 2.

24 Ibid., 57, 58, 60; Ibn Batoutah, Voyages, IV, 397.

25 On the Mandingoes and on the state of Mālī (Mallel), see Labouret, "Mandingo"; idem. "Les Manding"; Westermann, Geschichte Afrikas, 75-85; Fage, History, 21. On the beginnings of the agricultural civilization of the Mande tribes, cf. Murdock, Africa, 64-77 (critical review by Fage,"Review of Murdock").

26 On the Songhai and the state founded by them, see: Westermann, Geschichte Afrikas, 91-105; Rouch, Les Songhay (passim); Fage, History, 26.

27 Attested, among others, by al-ᶜOmarī, Masālik, 94. The description of Tadmekka is to be found also in al-Bakrī: see el-Bekri, Description de l'Afrique, Arabic text, 181-2; translation 339-40. Cf. also more recently on Tadmekka (Tadmekket): Lhote, "Contribution", particularly 395.

28 The kingdom of Takadda (Takedda, Teguidda) is mentioned by Ibn Baṭṭūṭa, who visited it in 1353 (see Ibn Batoutah,

Voyages, IV, 436-44); the kingdom owes its name to the town, the ruins of which are at a place called Azelick, 20 km ENE of Teguidda n'Tisemt (Tegidda n'Tisemt), west of Aïr (Mauny, "Un âge de cuivre", 168-80; see particularly 175). Takadda was previously identified with the present-day Teguidda (Barth, Reisen, I, 510ff.).

29 Under the name Hīr or Hayr; see el-Bekri, Description de l'Afrique, Arabic text, 183, translation, 343; Marquart, Benin-Sammlung, CXVI. The kingdom was already known to al-ʿOmarī (Masālik, 94). Ibn Baṭṭūṭa (Voyages, IV, 445) mentions the land of Kāhir, undoubtedly the present-day Aïr. Leo Africanus (see Jean-Léon l'Africain, Description de l'Afrique, 473-5) calls this kingdom Agadez, after the recently-founded capital, Agades. For Aïr and its history, see also Yver, "Aïr".

30 Al-Jaʿqūbī, Historiae, 219. The text uses the form al-Ḥawḍīn (?) generally considered a corruption of the original inferred form al-Ḥawṣin. On this enigmatic name, cf. the recent work: Kubbel, Matveev, Arabskiye istochniki I, 386. The initial "al" is the Arabic definite article. Under their Kanuri name Afnū, the Hausa were known to al-Maqrīzī (Marquart, Benin-Sammlung, LXXXVII, XCII).

31 On Kanem and its history, see also Yver, "Kānem"; on the history of the area between the Niger and Lake Chad, see Urvoy, Soudan central.

32 The Teda themselves also played an important part in the history of Kānem. It was from this tribe that the kings of Kānem took their wives up to the end of the twelfth century. Some of the Teda came to settle in Kānem, while others were opposed to this. Cf. Yver, "Tubu", 886-7.

33 The Zaghāwa and the state founded by them have been disoussed in detail by Marquart (Benin-Sammlung, LXXIX-LXXXV.

34 The information given by medieval Arab travellers, geographers and historians about the countries and peoples of West Africa has been repeatedly examined and described, the most important of these studies being (in alphabetical order): Bovill, The golden trade; Cooley, Negroland of the Arabs; Delafosse, "Le Ghana et le Mali", 478-542; idem, Haut-Sénégal-Niger; Fage, Atlas; idem, History; Kubbel, Matveev, Arabskiye istochniki; Laforgue, "Notes sur Aoudaghost"; Marquart, Benin-Sammlung; Mauny, Tableau; idem, "La question de Ghana"; Urvoy, L'empire de Bornou; Westermann, Geschichte Afrikas.

1: ARABIC SOURCES

1 For this geographer and his information about Africa, see Brockelmann, GAL, I, 227 and Suppl. I, 405-6; Krachkovskiy, Arabskaya geogr. literatura, 156-9; Kubbel, Matveev, Arabskiye istochniki, I, 47-86.

2 GAL, I, 229, Suppl., 408; Krachkovskiy, 194-7; Kubbel, 141-9.

3 GAL, I, 229, Suppl., 408; Krachkovskiy, 198-205; Ibn Ḥauḳal, Liber imaginis terrae.

4 Krachkovskiy, Arabskaya geogr. literatura, 234-6.

5 Brockelmann, GAL, II, 44-6 and Suppl., II, 44; Krachkovskiy, Arabskaya geogr. literatura, 275-80.

6 GAL. I, 476, Suppl., I, 876; Krachkovskiy, 275-80.

7 An edition of the Arabic text of az-Zuhrī, Kitāb al-djaᶜrāfiyya, edited by Mahammad Hadj-Sadok, was published in 1968.

8 Youssouf Kamal, Monumenta cartographica; Kubbel, Matveev, Arabskiye istochniki, II, 210-22; Basset, Extrait.

9 Brockelmann, GAL, I, 477 and Suppl., I, 876-7; Lewicki, Ksiega Rogera, 1-95; Krachkovskiy, Arabskaya geogr. literatura, 281-99.

10 Brockelmann, GAL, I, 479 and Suppl., I, 880-1; Krachkovskiy, Arabskaya geogr. literatura, 330-42.

11 On Ibn Saᶜīd and his work, see particularly Krachkovskiy, Arabskaya geogr. literatura, 352-8. A French translation (by Reinaud) of the passages dealing with the Sudan from Ibn Saᶜīd's work is published in Aboulféda, Géographie, transl., II, part I, 212-29; EI, Suppl., 69-70. The Arabic edition, edited by J. L. Gines, is: Ibn Saᶜīd al-Magribi Libro de la extension de la tierra en longitud y latitud, Instituto el-Hasan (Tetuan 1958).

12 Brockelmann, GAL, I, 481-2 and Suppl., I, 882-3; Krachkovskiy, Arabskaya geogr. literatura, 358-66; Kowalska in Folia Orientalis, III (1962).

13 GAL, I, 130, Suppl., I, 161; Krachkovskiy, 382-6.

14 GAL, I, 54, Suppl., I, 53-4; Krachkovskiy, 400-2.

15 GAL, II, 44-6, Suppl., II, 44; Krachkovskiy, 386-94.

16 GAL, I, 141, Suppl., II, 175-6; Krachkovskiy, 405-11.

17 GAL, II, 134, Suppl., II, 164-5.

18 GAL, II, 256-7, Suppl., II, 365-6; Krachkovskiy, 417-30.

19 Jean-Léon l'Africain, Description de l'Afrique, 127.

20 Ibid., 468.

21 Ibid., 479.

22 Ibid., 483.

23 Ibid., 567.

24 Ibid., 579.

25 Krachkovskiy, Arabskaya geogr. literatura, 445-50; Jean-Léon l'Africain, Description de l'Afrique, v-xi.

2: VEGETABLE FOODSTUFFS

1 On the significance of agriculture in West Africa and on the origin of some of the plants grown there, see Fage, Review of Murdock, 302-4.

2 On this information, see Mauny "Notes", 725-6.

3 See Golberry, Travels in Africa, I, 331.

4 The present basic foodstuffs of the Mandingo peoples, according to Labouret ("Les Manding", 40), are: African plants — varieties of sorghum millet and pearl millet, and eleusine, beans and Bambara groundnuts (Voandzeia), and, in the southern part of the area inhabited by these people, good species of yams; American plants — maize, sweet potatoes and groundnuts are important. Further east, in Nigeria, among the edible plants cultivated, yam is the most important (cultivated in the southern parts of the country, producing about 7,000,000 tons per annum), and next, cassava (cultivated in south-east Nigeria, producing about 5,000,000 tons per annum), and both types of millet (cultivated in the north, producing about 2,000,000 tons per annum). An important part is also played by sweet potatoes (c. 1,000,000 tons per annum). The indigenous African oil palm (Elaeis guineensis), cultivated in the extreme south of Nigeria, and groundnuts, cultivated in the north-west, are of major importance. See Le Nigéria 17, and map 20. The distribution and classification of African arable plants according to type and place of origin has been discussed by Murdock in his Africa, which has, however, been strongly criticized by Africanists (e.g. Fage, Review of Murdock) and ethno-botanists (e.g. Baker, "Comments", 1-2). The history of edible plants in West Africa has also been discussed at length by Mauny in his "Notes" and particularly in his monumental Tableau, 227-54. Mention should also be made of three important papers by Irvine: "Indigenous food plants", "Emergency food plants", and "Food plants".

5 My translation of the word "dhura", as it appears in the Arabic original by Ibn al-Faqīh.

6 Ibn al-Fakîh, Kitâb al-Boldân, 87; Kubbel, Matveev, Arabskiye istochniki, I, 64, 83.

7 Jacut, Geogr. Wörterbuch, II, 933.

8 Al-ᶜOmarī, Masālik, 61.

9 Ibid., 44.

10 Jean-Léon l'Africain, Description de l'Afrique, 54.

11 The medieval Arabic writers use the word "Nile" — an-Nīl in Arabic — for the Niger (and also the Senegal); this has repeatedly given rise to misunderstanding.

12 El-Bekri, Description de l'Afrique, Arabic text, 177; translation, 332; the Arabic text of the passage seems to be corrupt.

13 Ibid.; translation, 331.

14 Ibid., Arabic text, 178; translation, 333.

15 Ibn Batoutah, Voyages, IV, 414-15.

16 Jean-Léon l'Africain, Description de l'Afrique, 466.

17 Ibid., 468.

18 In Arabic, ḥubūb (cf. ed-Dimichqui, Cosmographie, 240; Manuel de la cosmographie, 341). The word is used for various kinds of grain (wheat, barley, etc.), and also for wild cereals. See Wahrmund, Handwörterbuch, I, 484; Dozy, Suppl., I, 239.

19 Jean-Léon l'Africain, Description de l'Afrique, 471.

20 Al-ᶜOmarī, Masālik, 94.

21 Ibid.

22 El-Bekri, Description de l'Afrique, Arabic text, 181; translation, 339.

23 Al-ᶜOmarī, Masālik, 94.

24 Jean-Léon l'Africain, Description de l'Afrique, 476.

25 Ibid., 472-3, 478. On the cultivation of sorghum and pearl millet in Hausaland see also the account by Imam Umaru (Mischlich, Kulturen im Mittel-Sudan 7-12).

26 Jean-Léon l'Africain, Description de l'Afrique, 480. Early in the nineteenth century, the kind of millet known as gossob was the most widely-cultivated grain in Bornu, where it was eaten both raw and roasted. This kind of millet, ground and soaked in water, was used as food for pilgrims and soldiers; it was also used to make porridge with melted fat and some mulūkhiyā added (kaddell): see Denham, Clapperton, Oudeney, Discoveries, Denham's journal, 316.

27 See Mauny, Tableau, 238-9.

28 For this kind of millet and its varieties, and its domestication in West Africa, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 44, 48; Cobley, Botany of trop. crops, 25, 26; Murdock, Africa, 68; Portères, "Berceaux agricoles", 7; Baker, "Comments", 2; Dalziel, The useful plants, 538-40; Mauny, Tableau, 238 et al.

29 On sorghum and its varieties, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 44-5; Cobley, Botany of trop. crops, 14; Murdock, Africa, 68; Porteres "Berceaux agricoles", 7. Russell, "West African crop plants", 1, 4; Baker, "Comments", 1, 2; Dalziel, The useful plants, 544-7; Steentoft-Nielsen, Introduction, 198 (Sorghum bicolor, formerly S. vulgare), et al.

30 Mauny, "Notes", 711; this is also shown by the passage already quoted from the work of Ibn al-Faqīh al-Hamadhānī.

31 On this kind of millet, see Mauny, Tableau, 238; West

African names of Pennisetum are listed by Dalziel, The useful plants, 538.

32 Fagnan, Maghreb, 21 and footnote 3.

33 Dozy, Suppl., I, 117.

34 Renaud, Colin, Tuḥfat al-aḥbāb, 44. no. 96.

35 Dozy, Suppl., I, 42.

36 Barth, Reisen, V, 494 (Cass, III, 696). This is evidently a name of Berber origin. In the language of the Soninke (i.e. the Sarakole, the descendants of the former people of Ghāna), pearl millet (bulrush millet) is called inlé or illé (see Mauny, Tableau, 449), a further transformation of the basic Berber word.

37 Barth, Reisen, V, 682 (Cass, III, 753). The Ahaggar and Air Tuareg know millet (Pennisetum typhoideum) under the name enele. It is grown both in Ahaggar and in Air. In Air, they also grow sorghum, in the language of the Air Tuareg, abora: see Nicolaisen, Ecology and culture, 192, 202. For the various kinds of énélé in Tuareg countries, see also Gast, Alimentation, 69-70.

38 Barth, Reisen, V, 657 (Cass, III, 747). It should be added that, according to Broussais ("Recherches", 389), in the Berber dialect of the Zenaga in Mauritania, the name of Sorghum vulgare (S. bicolor), or Guinea corn, is illa (pl. illen).

39 Dozy, Suppl., I, 42.

40 Ibn Batoutah, Voyages, IV, 378.

41 Ibid., IV, 386.

42 Ibid., IV, 394-5.

43 Dozy, Suppl., I, 428. In the Arabic dialect spoken in Wadai and in the area to the east of Lake Chad, bulrush millet is called dukhn: see Carbou, Methode, 210.

44 Ibn al-Faqîh, Kitâb al-boldân, 87; Kubbel, Matveev, 'Arabskiye istochniki, I, 64, 83.

45 Jacut, Geogr. Wörterbuch, I, 400.

46 Aboulféda, Géographie, Arabic text, 125; transl. II, part 1, 174-5.

47 Fagnan, Additions, 53 and 11.

48 Nachtigal, Sahara und Sudan, III, 545.

49 Ibid., 545.

50 Gamble, The Wolof, 29.

51 See, for example, Barth, Reisen, I, 354 and passim (Cass I, 263).

52 Gunn, Pagan peoples, 15.

53 Nachtigal, Sahara und Sudan, III, 545.

54 Ibid., 653.

55 Fernandes, Description, 122-3.

56 Ibid., 171, note 243.

57 Fagnan, Additions, 53, 11.

58 Dozy, Suppl., I, 117. It may be added that in the Berber dialect of the Zenaga (in southern Mauritania), bulrush millet is called mudhri or mutri (Broussais, "Recherches", 389; Nicolas, La langue berbère, 141), possibly derived from the Arabic dhura.

59 Barth, Reisen, I, 354, 360-1, 402, 523, 612; II, 17, 60; IV, 315; V, 31, 275, 298, 311 (Cass, I, 266, 269-70, 297, 374, 417; 434, 459; III, 220, 365, 522, 535, 594). On the present-day cultivation of bulrush millet in areas inhabited by the Songhai, see Rouch, Les Songhay, 17. This grain, which needs a more humid soil than durra, is called hayni in the north of the Songhai ethnic area, and darankoba in the south. In northern Nigeria, bulrush millet (Pennisetum typhoideum), with Sorghum vulgare, is the principal Hausa crop (Smith, Baba of Karo, 16).

60 Nachtigal, Sahara und Sudan, III, 545, Penicillaria spicata.

61 Gunn, Pagan peoples, 15.

62 Idem., Peoples of the plateau, 22.

63 Gunn, Conant, Peoples of the middle Niger, 35.

64 Ibid., 57.

65 Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 24, 26.

66 Gamble, The Wolof, 29, 37, 100. The cultivation of two kinds of millet (presumably Pennisetum typhoideum and Sorghum vulgare) in the mid-eighteenth century in Senegal is attested by Adanson (Voyage to Senegal, 55).

67 According to Mauny ("Notes", 711, footnote 2).

68 Portères, "Berceaux agricoles", 7.

69 Murdock, Africa, 68; Baker, "Comments", 2.

70 Cobley, Botany of trop. crops, 25-6; also Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 44, 48.

71 Cf. also Nachtigal, Sahara und Sudan, I, 653.

72 Cobley, Botany of trop. crops.

73 Portères, "Berceaux agricoles", 6.

74 Stanton, "Varietal variation", 4-5.

75 Mauny, "Notes", 719.

76 Portères, "Berceaux agricoles", 7; it seems, however, that the best theory is the one which derives the name "sorghum" from Latin suriacum ("Syrian [millet]") see Mauny, "Notes", 719, footnote 1.

77 Gamble, The Wolof, 29.

78 Barth, Reisen, V, 682 (Cass, III, 753). The Ahaggar and Aïr Tuareg called sorghum abora, while in Aïr, aborak means the tree Balanites aegyptiaca (see Nicolaisen, Ecology and culture, 520). According to Gast (Alimentation, 70) the word abôra in Ahaggar means "red sorghum" (Sorghum saccharatum).

79 Barth, Reisen, II, 397 (Cass, II, 56); Nachtigal, Sahara und Sudan, I, 653. In the Arabic dialect spoken in Wadai and in territories east of Lake Chad, sorghum is called bérbéré — see Carbou, Méthode, 210. For West African names of sorghum, see Dalziel, The useful plants, 544.

80 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 6.

81 Ibid., Arabic text, 3; transl., 3. This reference relates to the consumption of millet.

82 El-Bekri, Description de l'Afrique, Arabic text, 173; transl., 325. Sorghum (dhura in the text) was used there as a medium of exchange.

83 Gamble, The Wolof, 29, 37. In the mid-eighteenth century, the people on the southern banks of the lower Senegal mainly cultivated the "large" species of millet, doubtless sorghum. Adanson, to whom we owe this information (Voyage to Senegal, 69), also gives the local name of this species of millet — guiarnatt.

84 Gamble, The Wolof, 29. According to Trochain "Mission botanique", guinea corn (sorghum) is less cultivated at present in Senegal than bulrush millet. According to Tardieu ("Les cultures d'appoint", 5), in the Western Sudan, bulrush millet is cultivated in the north, where it is one of the principal food crops, while sorghum is cultivated in the south.

85 Jacut, Geogr. Wörterbuch, I, 400.

86 Aboulféda, Géographie, Arabic text, 125; transl., II, part I, 174.

87 El-Bekri, Description de l'Afrique, Arabic text, 158; translation, 300.

88 Fagnan, Maghreb, 54.

89 Ed-Dimichqui, Cosmographie, 238; Manuel de la cosmographie, 338. The Berber Zenaga living in Mauritania (and thus close to the site of the city of Audaghast), now know three kinds of sorghum (Nicolas, La langue berbere, 145).

90 Jean-Léon l'Africain, Description de l'Afrique, 464 and 472; but Mauny correctly observes (Tableau, 242) that in Leo's time, sorghum was already cultivated in Italy and no doubt in Spain as well.

91 El-Bekri, Description de l'Afrique, Arabic text, 181; transl., 339 (for importation of grain crops to Tadmekka).

92 El-Cazwini, Kosmographie, 11.

93 Jacut, Geogr. Wörterbuch, I, 822.

94 Al-ᶜOmarī, Masālik, 61.

95 El-Bekri, Description de l'Afrique, Arabic text, 180; transl., 337. This word is now used by the Arabs primarily for bread (cf. Wahrmund, Handworterbuch, II, 330), and in Morocco especially for flat pancake-like bread made from barley flour; these are sometimes put on a dish in layers, with a hole in the centre containing milk or melted butter, or a spicy sauce made with oil, and served hot. Sometimes the word is used in the Sahara for coùscous (for couscous, see note 244 to this chapter). See Dozy, Suppl., II, 194.

96 Ibn Batoutah, Voyages, IV, 432-5. Sorghum or guinea corn is still cultivated throughout most of the territory inhabited by the Songhai (though together with bulrush millet). In the north of the area it is called saba, in the south, hamo (see Rouch, Les Songhay, 17). For the cultivation of sorghum in Gao and its neighbourhood, see Barth, Reisen, V, 214, 226 (Cass, III, 479, 485).

97 Edrîsî, Description de l'Afrique, Arabic text, 8; transl., 10.

98 Barth, Reisen, V, 214, 226 (Cass III, 479, 485) and passim.

99 El-Bekri, Description de l'Afrique, Arabic text, 181; transl., 339.

100 Fagnan, Maghreb, 55.

101 Ed-Dimichqui, Cosmographie, 239; Manuel de cosmographie, 339; porridge made from millet or some other grain is now the principal daily food of the Tuareg of Ahaggar and the Teda (Tebu): see Briggs, Tribes of the Sahara, 241, 244. On the various kinds of millet porridge known to the Ahaggar Tuareg, see Gast, Alimentation, 74-5.

102 Ibn Batoutah, Voyages, IV, 438.

103 Barth, Reisen, I, 402, 524 (Cass I, 257, 375) and passim.

104 Al-ᶜOmarī, Masālik, 44.

105 Barth, Reisen, II, 488, 518, 522-5, 548, 573 (meiwa, meiwāri), 603, 654; III, 24, 26, 33, 50, 75, 85, 157, 251, 252, 260, 303, 309, 343, 398 (Cass, II, 120, 142, 144-6, 159, 176, 192, 220, 245, 247, 253, 269, 286, 294, 354, 440, 441, 447, 485, 489, 558).

106 Nachtigal, Sahara und Sudan, I, 652, 653, 654; II, 168, 389, 390, 552, 582, 649.

107 Jacut, Geogr. Wörterbuch, 932-3; Dammann, Beiträge, 54-5.

108 Edrîsî, Description de l'Afrique, Arabic text, 12; transl., 15.

109 Ibid., Arabic text, 34-5; transl., 41. In the countries east of Lake Chad and in Wadai, guinea corn is called bérbéré or durra in the local Arabic dialect; see Carbou, Méthode, 210.

110 Jean-Léon l'Africain, Description de l'Afrique, 464.

111 Ibid., 477.

112 Ibid., 478; for the cultivation of guinea corn in Hausaland, see also Barth, Reisen, IV, 171, V, 311, 320, 330, 346 (Cass, III, 126, 544, 549, 555, 566).

113 Jean-Léon l'Africain, Description de l'Afrique, 480.

114 Rice is the staple food for some of the coastal populations in West Africa, especially in former French West Africa, see Hailey (African survey, 859-60). For rice in West Africa, see Dalziel, The useful plants 532-4, and Morgan, Pugh, West Africa, 81-3. For wild and cultivated rice, and their importance during the period corresponding to the European Middle Ages, see Mauny, Tableau, 242-3.

115 In Senegal, wild rice (baboure in the Tukolor language) grows on wet clay meadows in the delta of the Senegal; see Adam, "Végétation".

116 Portères, "Berceaux agricoles", 13.

117 Barth, Reisen, II, 573 (Cass, II, 177).

118 Ibid., II, 519 (Cass, II, 142).

119 Nachtigal, Sahara und Sudan, III, 464.

120 Maurizio, Pożywienie, 24-5.

121 Mauny, "Notes", 718. Hailey (African survey, 858) also thinks that in all probability rice was introduced to Africa by the Arabs.

122 El-Cazwini, Kosmographie, 17; cf. Dammann, Beiträge, 48. According to Caillié (Journal, I, 148), rice was also cultivated in Mauritanian Adrar.

123 Maurizio, Pożywienie, 24 (quoting written information from Schweinfurth). The Mandingoes and the Sosso (Soso) in the basin of the Gambia cultivated rice fields in the mid-eighteenth century, rice being almost the only crop cultivated in these wet lands: see Adanson, Voyage to Senegal, 166.

124 Gamble, The Wolof, 29, 37-8. See also Leca, "Les pêcheurs de Guet N'Dar", 310-11.

125 Gamble, The Wolof, 100.

126 Ibn Batoutah, Voyages, IV, 394.

127 Ibn al-Fakîh, Kitâb al-boldân, 87; Kubbel, Matveev, Arabskiye istochniki, I, 64, 83.

128 Barth, Reisen, V, 516 (Cass, III, 703).

129 Ibn Batoutah, Voyages, IV, 394.

130 Al-ᶜOmarī, Masālik, 61.

131 Jean-Léon l'Africain, Description de l'Afrique, 465. On the subject of the part played by rice in the daily diet of the Mandingoes and their neighbours; see also Portères, "Notes sur la riziculture " (N.W. Ivory Coast) and Sidibé, "Les Foula du Birgo" (Kita district of the Soudan)

103, 105-6, 107-8, 111; 68, 470-4, 485, 498.

132 Monteil, "La langue des Bozo", 330.

133 Barth, Reisen, IV, 397 (Cass, III, 268).

134 Ibid., V, 31 (Cass, III, 365).

135 Baumann, Thurnwald, Westermann, Völkerkunde, 351-2.

136 Vendeix, "Monographie du pays Senoufo", 643-6.

137 Edrîsî, Description de l'Afrique, Arabic text, 8; translation, 10.

138 Ibn Batoutah, Voyages, IV, 435.

139 Jean-Léon l'Africain, Description de l'Afrique, 471. Nowadays, rice is cultivated by the Songhai in the part of the valley of the Niger which runs through their country, and is an important additional foodstuff; it is eaten, as millet is, in the form of flour or porridge cooked to a pap. See Rouch, Les Songhay, 17. Y. Guermond ("L'économie rurale", 31) stresses the importance of rice in the agricultural production of the present-day Gao area, by comparison with that of sorghum. Desplagnes (Le plateau central nigérien, 229) reports that the people of the central Niger plateau used to eat "wild rice".

140 Barth, Reisen, IV, 405 (Cass, III, 274).

141 Ibid., V, 197 (Cass, III, 466).

142 Ibid., 703 (ibid., 759). On the consumption of rice (taferet in Tamahaq) among the Tuareg, see Gast, Alimentation, 107.

143 Jean-Léon l'Africain, Description de l'Afrique, 472, 476, 478. At the market of Kano, in the early nineteenth century, small rice cakes were sold: (see Denham, Clapperton, Oudney, Discoveries, Clapperton's journal 52).

144 Barth, Reisen, V, 320, 323, 330 (Cass, III, 549, 551, 555). There is interesting information about the cultivation and use of rice, and particularly about foods made from rice in modern times by the Hausa, in Imam Umaru (Mischlich, Kulturen im Mittel-Sudan, 13-14). Imam Umaru does not mention the use of wild rice in Hausaland. For the cultivation and use of rice in Hausaland and adjacent areas of present-day Nigeria, see Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 24-5; Gunn, Conant, Peoples of the middle Niger, 35, 57; Gunn, Peoples of the Plateau, 54. In the Hausa area of northern Nigeria, a type of upland rice (iburu) is known as well as swamp rice, see Smith, Baba of Karo, 16.

145 Al-ᶜOmarī, Masālik, 44.

146 Ibid.

147 Ibid.

148 Barth, Reisen, II, 396 (Cass, II, 56). Rohlfs (Quer durch Afrika II, 10) reports that rice grew wild in Bornu, or required only little attention. See also ibid., 18, 158,

210, 250.

149 Barth, Reisen, III, 146 (Cass, II, 345).

150 Ibid., III, 116 (Cass, II, 320).

151 Ibid., II, 398 (Cass, II, 57).

152 Nachtigal, Sahara und Sudan, I, 655.

153 For this grain and its domestication in West Africa see Cobley, Botany of trop. crops, 35; Dalziel, The useful plants, 526; Murdock, Africa, 23, 68; Mauny, "Notes", 702; Mauny, Tableau, 243; Stanton, "Varietal variation", 5; Portères, "Berceaux agricoles", 9; Baker, "Comments", 3; Morgan, Pugh, West Africa, 79-81, including a map of the present distribution of fonio cultivation in West Africa. In "Les céréales mineurs" Portères discusses at length the cultivation of fonio in the Republic of Guinée and in the area of Debaba, Kita in Mali, in the Republic of Niger, in the Sudan and in Senegal, and also refers to the use of fonio in the production of foods and alcoholic drinks; unfortunately this study has not been available to me.

154 Baumann, Thurnwald, Westermann, Völkerkunde, 322; Cobley, Botany of trop. crops, 35-6.

155 Ibn Batoutah, Voyages, IV, 394. See also Dalziel, The useful plants, 526, where the author also cites other local names of this crop. It may be added that Caillie (Journal, I, 390) calls this crop foigné (areas near Ouassoulo and Sangaran).

156 Ibn Batoutah, Voyages, IV, 398.

157 Al-ᶜOmarī, Masālik, 61. The name of this crop was erroneously written in the manuscripts of al-ᶜOmarī's work (see ibid., footnote 1) as fūtī (with two diacritical points instead of one over the penultimate letter) or qūtī (the same error in the first and the penultimate letter of the word).

158 Rouch, Les Songhay, 18; Dalziel, The useful plants, 526, quotes fingi as the Songhai name of this crop.

159 E.g. the district of Kita; see Sidibé, "Les Foula du Birgo", 474. According to information from a young Mali scholar, M. Sékéné-Mody Cissoko from IFAN in Dakar, fonio is quite commonly grown in the whole western part of the present-day state of Mali, as well as in Upper Guinée.

160 Gamble, The Wolof, 29. The crop is seldom cultivated here.

161 Gunn, Peoples of the plateau, 22 (Jerawa tribe); 54, (Zaria Province); Gunn, Pagan peoples, 70, (Zaria Province); Gunn, Conant, Peoples of the middle Niger, 35.

162 This refers to two species of wheat, Triticum vulgare and Triticum durum. According to Mauny (Tableau, 237), the latter species is presumably of Ethiopian (Abyssinian) origin. He emphasizes that wheat is one of the principal cultivated plants in the West African oases.

163 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 5-12. It

is possible that the cultivation of wheat was brought from the Maghrib to the western Sudan by Ibāḍite merchants from Wargla who were in close commercial contact with the western Sudan in the early Middle Ages. A local variety of wheat called khalouf (khaluf) is still grown in Wargla (see Doreau, Considérations actuelles sur l'alimentation, 9). On the origin of Saharan wheat, see Gast, Alimentation, 78.

164 Mauny, "Notes", 691.

165 Barth, Reisen, II, 398 (Cass, II, 57).

166 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 6. Ca da Mosto (Voyages, 42) says that "no corn, rye, barley, spelt or vines" grew in the kingdom of Senegal, though attempts had been made to grow them from seed brought by the Portuguese.

167 Jacut, Geogr. Wörterbuch, I, 400.

168 Aboulféda, Géographie, Arabic text, 158; transl., II, part I, 174.

169 Fagnan, Maghreb, 54.

170 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300. For the cultivation of wheat in Audaghast, see the comment by Mauny (Tableau, 236). Nicolaisen (Structures politiques, 12) records that wheat or barley is cultivated in the river valleys (wādī) when they are flooded. A similar practice in the past is attested for the Tuareg from Ahaggar. According to another passage in the same work (18), wheat and barley are also cultivated in Aïr; the ears are collected by hand, sickles being used only to cut the ears of millet.

171 El-Bekri, Description de l'Afrique, Arabic text, 151; transl., 289.

172 Ibn Batoutah, Voyages, IV, 397.

173 Al-ᶜOmarī, Masālik, 61.

174 Fernandes, Description, 80-3. Wheat, grown in the gardens under the palm trees, is still sold in the Atar oasis (see Naegele, "Notes", 7). Presumably cultivation started rather late in these areas, for, as late as the middle of the tenth century, the Arab traveller Ibn Ḥauqal reports that the peoples of the western Sahara from Sijilmāsa to Audaghast and Tadmekka did not know either wheat or barley. See Ibn Ḥauḳal, Liber imaginis terrae, I, 84.

175 Ed-Dimichqui, Cosmographie, 240; Manuel de la cosmographie, 341. This information makes it impossible to accept the theory proposed by Rouch (Les Songhay, 17): according to this theory, wheat (called by the Songhai alkama, from the Arabic al-qamḥ — Dalziel, in The useful plants, 550, gives halkama) was supposed to have been introduced into their country from North Africa by the Moroccans — evidently alluding to the brief conquest of the country of the Songhai by Morocco begun in 1591 (see Fage, History,

28). Rouch goes on to say that the Songhai grind wheat with specially chosen stones, making couscous and a kind of noodles. Wheat is now grown in the whole of the Niger bend between Timbuctu and Gao, according to information from M. Cissoko from Mali (see note 159 above). He also praises the delicious wheat rolls sold in Gao. For the cultivation of wheat near Bandiagara and Hombori, in the bend of the Niger, see Desplagnes, Le plateau central nigerien, 229; for present-day Gao and the surrounding area, see Guermond, L'économie rurale, 37.

176 Ibn Batoutah, Voyages, IV, 438. The Tuareg nomadising in recent times in these areas belonging to the Auelimmiden tribe, know wheat, which they call elkáme (from Arabic al-qamḥ) — see Barth, Reisen, V, 683 (Cass, III, 753). Varieties of wheat belonging to the species Triticum aestivum are grown in Ahaggar, where they are known under the common name ered. Wheat of the species Triticum vulgare plays an important part in Aïr, where it is one of the most commonly-grown cereals, and where it bears the name elkama. See Nicolaisen, Ecology and culture, 190, 202. According to Gast (Alimentation, 78), wheat was not very common in Ahaggar before 1861.

177 Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 31, 43, 64; Barth, Reisen, II, 106 (Cass, I, 485); Mischlich, Kulturen im Mittel-Sudan, 12-13. According to Imam Umaru, whose account is quoted by Mischlich, the people of Hausaland used wheat to make leavened bread, various kinds of cakes and pasta, as well as porridge.

178 Denham, Clapperton, Oudney, Discoveries, Denham's journal, 316; Barth, Reisen, II, 249, 396, 437 (Cass, I, 379; II, 57, 88); Rohlfs, Quer durch Afrika, I, 344, 349; Nachtigal, Sahara und Sudan, I, 579, 655; II, 390.

179 Edrîsî, Description de l'Afrique, Arabic text, 34-5; transl., 41. References to the cultivation of wheat in the land of the Zaghāwa in the second half of the tenth century are also to be found in al-Muhallabī in a passage quoted by Yāqūt; see Jacut, Geogr. Wörterbuch, II, 932; Dammann, Beiträge, 54-5. It is possible that the reference is to Kānem. It may be added that in Wadai, on the borders of the areas formerly inhabited by the Zaghāwa, wheat was known to the local population in the mid-nineteenth century, though their principal foodstuff was millet (dukhn, Pennisetum typhoideum): see Barth, Reisen, III, 524: (Cass, II, 662). Arabs from the Lake Chad area, and also those from Wadai, call wheat gémḥ or gémḥ, see Carbou, Méthode, 210.

180 Rohlfs, Quer durch Afrika, I, 187; Nachtigal, Sahara und Sudan, I, 414, 523; Briggs, Tribes of the Sahara, 214; Chapelle, Nomades noirs, 69, 122, 200.

181 Jacut, Geogr. Wörterbuch, IV, 820.

182 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 27.

183 Fernandes, Description, 122-3. Barley was also cultivated in the fifteenth century by the Berber inhabitants of the

Baffor Mountains (Mauritanian Adrar), see ibid., 80-1. Barley is still grown under the palm-trees of the Atar oasis; it is sold in the market there, see Naegele, "Notes" 13. In the middle of the tenth century, barley was not yet known to the peoples of the western Sahara (see Ibn Ḥauḳal, Liber imaginis terrae, I, 84). The cultivation of barley at Guaden (Ouadane, Ouadan) is mentioned by Leo Africanus, who reports that the same kind of grain was also cultivated at Tesset (present-day Tichit in south-eastern Mauritania), see Jean-Léon l'Africain, Description de l'Afrique, 419-21. Ca da Mosto also reports barley at Wadan (Voyages, 16). It is possible that the people of the western Sudan may have learned the cultivation of barley in the early Middle Ages from merchants of Wargla, where it is still grown to some extent.

184 Aubinierès, "Le Sahel mauritanien", 389, 391.

185 Barth, Reisen, V, 683 (Cass, III, 753). The name is derived from the Songhai farka subu ("donkey's grass"): see Dalziel, The useful plants, 529. Barley, Hordeum vulgare, is one of the most commonly grown grain crops in Aïr and also in Ahaggar; the Tuareg of these areas call it timẓin: (Nicolaisen, Ecology and culture, 190 and 202). On the cultivation of barley in Ahaggar, see Gast, Alimentation, 102-4.

186 Jean-Léon l'Africain, Description de l'Afrique, 465.

187 Ibid., 477.

188 Chapelle, Nomades noirs, 69; Briggs, Tribes of the Sahara, 241.

189 The cultivation of barley (and wheat) in small quantities by the non-Arab population, particularly near the town of Kuka (Kukawa), and its use there, was observed by Nachtigal (Sahara und Sudan, I, 654, 657, 689). In the early nineteenth century, barley was sown in furrows between the wheat: (see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 316).

190 Al-ᶜOmarī, Masālik, 67.

191 Ibid., 68, footnote 2.

192 Mauny, "Notes", 713-14. It is not improbable that barley cultivation reached the Sudan from Nubia, where it was known in the Middle Ages (see Jacut, Geogr. Worterbuch, IV, 820). The cultivation of barley, which is less sensitive to drought than wheat, in the Sahara oases is mentioned by Mauny (Tableau, 237).

193 Ed-Dimichqui, Cosmographie, 239; Manuel de la cosmographie, 339. The Arabic word ḥubūb, "cereals" used by ad-Dimashqī, may also mean the seed of wild large-grained grasses, and even sometimes leguminous plants, see Wahrmund, Handworterbuch, I, 484.

194 El-Bekri, Description de l'Afrique, Arabic text, 181; translation, 339.

195 Fagnan, Maghreb, 55.

196 Ed-Dimichqui, Cosmographie, 239; Manuel de la cosmographie, 339.

197 Edrîsî, Description de l'Afrique, Arabic text, 37; transl., 44. Najīl is the general name of several different kinds of grass, e.g. najīl baladī (Cynodon dactylon), najīl an-naᶜja (Astenatherum forskalei), najil an-namr (Dinerba retroflexa) etc. Unfortunately, we cannot tell which of these genera corresponds to aghristus (aghristis, etc); see also Dozy, Suppl., I, 28, and II, 643. For the use of plant roots by the Teda of Tibesti, presumably the same black-skinned peoples as those described by al-Idrīsī, see Briggs, Tribes of the Sahara, 241. The seeds and roots of wild plants are also collected by the Tuareg of Ahaggar and Aïr, see Nicolaisen (Structures politiques, 11); unfortunately he does not give the scientific names of the plants. Nicolaisen writes more fully about the collecting of seeds and roots of wild plants by the Ahaggar and Aïr Touareg, in his very important Ecology and culture, 178, which includes an interesting reference to the collecting of the roots of a plant called ahahel (Cistanche phelypea), by the Ahaggar Tuareg. After drying, these roots are pounded in a large mortar, and a kind of bread, much appreciated by the Tuareg, is baked from them. The Tuareg of the Kel Ewey tribe (Aïr) also collect the edible roots of the Cistanche, which they call kat'aket'i; they pound these and prepare a kind of porridge from them (Nicolaisen, Ecology and culture, 181).

198 Chapelle, Nomades noirs, 69 and 192-3. Equally important is the list compiled by Nicolaisen of wild plants yielding edible fruit, seed, stems and roots, collected and consumed by the Ahaggar Tuareg (Ecology and culture, 175-9). Elsewhere in this work (180-1), Nicolaisen also gives the names of many edible plants collected by the Aïr Tuareg. Gast has devoted a number of pages of his important book (Alimentation, 199-246) to the various wild plants which yield seeds, leaves, fruits, roots, etc. exploited by the Tuareg of Ahaggar. He classes these plants as "famine food", and gives a complete list.

199 According to Nachtigal (Sahara und Sudan, I, 656), the grain of Panicum turgidum was consumed in Bornu in the form of porridge. Nachtigal also mentions the collecting of the grain of this plant, whose Arabic name he gives as bu rukba, in areas inhabited by the Teda, including Tao and Tibesti (ibid., I, 267, 413); see also Dalziel, The useful plants, 535: bu-rĕkuba. Panicum turgidum is very common in the lower valleys of Ahaggar as well as throughout Aïr. The Tuareg of these areas collect its seeds, pound them in mortars and make them into porridge. The Tuareg name of Panicum turgidum is afezu. See Nicolaisen, Ecology and culture, 175, 180. On this subject see also Gast, Alimentation, 209-11.

200 The seeds of this plant are also collected by the Air Tuareg, who pound them in a wooden mortar for porridge. The local Tuareg name is wujjeg (Nicolaisen, Ecology and

culture, 180.

201 Barth, Reisen, III, 27, 236 (Cass, II, 247, 428). According to another early nineteenth-century account (Denham, Clapperton, Oudney, Discoveries, Denham's journal, 307), the people of Bornu ate the grain of the grass called kacheaia (probably the same as kaschá) which grew wild abundantly near water. The grain was dried in the sun, ground and pounded; it was then eaten like rice, or made into flour; it was considered a luxury.

202 Barth, Reisen, III, 27 (Cass, II, 247).

203 Ibid., 236 (ibid., 428).

204 Ibid., 399 (ibid., 559).

205 Ibid., IV, 306 (ibid., III, 209). For the population of this area, see Murdock, Africa, 413.

206 Barth, Reisen, III, 27 (Cass, II, 247).

207 The Tuareg names (in the Auelimmiden dialect) for various kinds of kréb are given by Barth (Reisen, V, 682-3; Cass, III, 753).

208 According to Mauny (Tableau, 228), the grain collected by the people of Tadmekka was Cenchrus biflorus (cramcram). Desplagnes (Le plateau central nigérien, 229) identifies cramcram as Pennisetum distichum, either a synonym for Cenchrus biflorus (C. distichum): (see Dalziel, The useful plants, 522, quoting the local names), or a very similar species. There has been much confusion between Pennisetum and Cenchrus.

209 Nachtigal, Sahara und Sudan, I, 655.

210 Ibid., II, 179.

211 Ibid., 677.

212 Ibid., III, 184. Eragrostis sp. also occurs among the wild plants in Aïr; the local name is téjit; its seed is used for porridge by the local Tuareg.

213 Barth, Reisen, I, 427 (Cass, I, 313).

214 Nachtigal, Sahara und Sudan, I, 655; Dalziel, The useful plants, 522. Arabs from the countries east of Lake Chad and from Wadai call this plant askemta; see Carbou, Methode, 211.

215 Barth, Reisen, V, 682 (Cass, III, 753).

216 Ibid., 223 (ibid., 482-3).

217 Ibid., IV, 373 (ibid., 252).

218 Ibid., 313 (ibid., 209).

219 Ibid., II, 219, 397, 436 (ibid., I, 559; II, 54, 87).

220 For other edible grain from wild plants, see Carbou, Méthode, 211; Thomas, "La conduite négro-africaine du repas", 593; Mauny, Tableau, 228. Burgu should also be included among these grains; this will be discussed below, when we are dealing with sugar.

221 Al-ᶜOmarī, Masālik, 61. The account given by this author is too generalized to enable us to establish whether this is ordinary porridge, couscous, or the ball of cereal known in French ethnographic literature as "la boule". Information about the preparation of farinaceous foods by the people of West Africa is rather scarce. The most detailed description is found in Piault, La vie quotidienne de la femme Maouri (1966); this deals with Maouri, a district on the borders of the areas occupied by the Songhai (or more accurately, the Zerma or Djerma) and the Hausa. A detailed account of how porridge (known as tau) was prepared from fonio by Mandingoes, is given by Caillié (Journal, II, 14-15). The tau referred to by Caillié must be the same as tô, the traditional cereal food of many peoples of the western Sudan, which is prepared from flour cooked partly in steam (like couscous), and partly in water in the lower pot which gives off the steam. A sauce consisting of beef, mutton or goat-meat and vegetables (such as onions, manioc, sweet potatoes, cabbage etc.), flavouring (e.g. pimento and baobab leaves), and fat (shea butter) is added to this dish. See Les plantes alimentaires, 75, based on material collected by Pales and Mme Faucher.

222 Edrîsî, Description de l'Afrique, Arabic text, 37; transl., 44. Probably this refers to the same kind of grindstones (saddle querns) as were in use in the late fifteenth and early sixteenth centuries in the land of Baffor (Mauritanian Adrar) on the western borders of the Sahara. This is how Fernandes (Description, 80-1) describes them: "In that country there are no animal-driven mills or water mills, or hand-operated millstones; they simply take two stones. Into the lower one, which is slightly concave, grain is poured; this is then ground by the upper stone. So the whole of the grain is ground into flour, unlike ours which is free of bran and does not need to be sieved." For the use of saddle querns by the people of Ahaggar, see Gast, Alimentation, 347-50. These querns are in the Saharan Neolithic tradition.

223 Nachtigal, Sahara und Sudan, II, 56 and III, 262. This custom was also known in Hausaland: see Smith, Baba of Karo, 52.

224 Nachtigal, Sahara und Sudan, I, 654. This has long been common usage in areas inhabited by the Mandingoes, as we are informed with reference to the countries on the Gambia river by Mungo Park (Travels, 10); he visited this area at the end of the eighteenth century. In Bornu, grain is ground in wooden mortars, as attested by Nachtigal. Nachtigal explains this by the absence in that area of hard stone suitable for grinding grain. The Songhai also still use wooden mortars to grind millet into flour (see Rouch, Les Songhay, 17). In addition to saddle querns, the Ahaggar Tuareg also use mortars: see Gast, Alimentation, 344-7.

225 Nachtigal, Sahara und Sudan, I, 654. It is possible, however, that al-ᶜOmari was only referring to the process

of cleaning the millet seed from the husks, as still done by various African peoples. For example, according to Nicolaisen (Ecology and culture, 242), the Tuareg clean millet in the following way: "A quantity of millet seed is poured into a large wooden mortar . . . A little water is added to the seed, which is then pounded for about ten minutes. The seed thus pounded is then poured into a plaited dish or other receptacle to be winnowed. This is done by shaking the plaited dish itself the husks covering the seeds are thus blown away by the wind." Only after this is the seed pounded to flour. See also the method of preparing the porridge called ésink, practised by the Ahaggar Tuareg (Gast, Alimentation, 74).

226 Nachtigal, Sahara und Sudan, I, 579.

227 Barth, Reisen, II, 17, 36 (Cass, I, 434, 446).

228 Nachtigal, Sahara und Sudan, I, 656. Apparently these are "millet-balls". This is how the preparation of a dish of this kind was observed by Piault, in the border country of the Songhai and the Hausa. The dish is here called huraa, and is made of millet. Millet grain, pounded, threshed and sieved, is washed in water and ground to flour in a mortar; the flour is kneaded into a ball, which is put into boiling water and cooked for about an hour. The "ball" is then taken from the water and kneaded in the mortar, with water and pepper added. Presently, flour is added, with milk or water and sugar; in this form, "ball" is drunk (Piault, La vie quotidienne de la femme Maouri, 27-8). In Hausaland (Karo), millet-balls of this kind were eaten with sour milk (Smith, Baba of Karo, 52). The Fulani also know "millet balls" as food for travellers (see Dupire, Peuls nomades, 60). Desplagnes (Le plateau central nigérien, 230) reports that in the neighbourhood of Bandiagara and Hombori, such millet-balls, dissolved in milk or water, make a drink known as dhône (i.e. daqno ?). This is probably the honeyed drink called dõn mentioned in the legend about King Farañ (ibid., 414).

229 Ibn Batoutah, Voyages, IV, 394.

230 According to Leo Africanus, ᶜaṣīda (el hasid in the text) was prepared as follows in the province of Hea in Morocco: barley flour was poured into a pan of boiling water and stirred with a stick until cooked. The porridge was poured out and a small hole made in the centre, into which argan oil was poured. In spring and summer the flour was cooked in milk, or milk was added to it (Jean-Léon l'Africain, Description de l'Afrique, 72). Nowadays, ᶜaṣīda means a thick pap made of flour and melted butter (Wehr, Arabisches Wörterbuch, II, 554). Sometimes ᶜaṣīda is used for "a sweetmeat or small cake" (see Wahrmund, Handwörterbuch, II, 266); or a "millet cake" (Carbou, Méthode, 182), or even "syrup" (Wahrmund, Handwörterbuch). For other accounts of this food, see Dozy, Suppl., II, 133.

231 Nachtigal, Sahara und Sudan, I, 652.

232 Ibid.

233 Ibid., 579. This sauce for flavouring porridge is prepared in the Maouri country, where it is called miyàa, as follows: onion slices are put into boiling oil in a pan. When the onion is brown, meat (previously washed) is added. When it boils, various seasonings are added (soumbala, dried tomatoes, pepper, pimento, mushrooms, garlic); the whole is then cooked for an hour and a half, stirred with a wooden spoon (Piault, La vie quotidienne de la femme Maouri, 29-30). Another account of a sauce added to millet porridge as made in the western Sudan can be found in Thomas's "La conduite négro-africaine du repas", 592. This sauce may be made with water, with the addition of meat or fish, and of course with various kinds of spices to flavour it. A description of sauces added to millet dishes prepared by the peoples of the Lobi group in West Africa is included in Labouret's Les tribus du rameau Lobi, 106-7.

234 Barth, Reisen, III, 260 (Cass, II, 447).

235 Ibid., II, 200 (ibid., I, 547).

236 Ibid., IV, 341 (ibid., III, 231).

237 Ibid., V, 280 (ibid., 525). See also Thomas, "La conduite negro-africaine du repas", 592 (fresh or sour milk).

238 Nachtigal, Sahara und Sudan, III, 262.

239 Ibid., I, 657.

240 Ibid., 658.

241 The Songhai now make two kinds of porridge, thick, known as harikoare or taso, and thin, called kawi (see Rouch, Les Songhay, 17). In the early nineteenth century, porridge (Arabic bezīn, see Dozy, Suppl., I, 579, under zabazīn), with milk and poultry (chicken) was the principal food of the people of Sokoto (see Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 110). In the middle of the eighteenth century, the people of the lower Senegal ate couscous prepared from two kinds of millet (see Adanson, Voyage to Senegal, 55). The Mandingoes added shea butter to porridge. Porridge made from sorghum can be of various consistencies — a pap, a medium porridge, or a solid pudding. For the territory of Senegal, a description of the preparation of millet foods is given for the Serer people (near the town of Thiès) by Gamble in "Usages alimentaires", 227-8 and passim. Another description of the preparation of porridge (lah) in Senegal, and also the sauce added to it, is to be found in Les plantes alimentaires, (74-6), from information collected by Pales and Mme Faucher.

242 Ibn Batoutah, Voyages, IV, 386. Porridge made from millet with sour milk added is eaten by the Fulani, see Dupire, Peuls nomades, 60. Arabic jarīsh is coarsely-ground porridge. See Wahrmund, Handwörterbuch, I, 430. A paste of flour sweetened with honey and with fat added was in use in Bornu (Denham, Clapperton, Oudney, Discoveries, Denham's journal, 316). The millet-porridge called esink or echink (eshink) of the Ahaggar and Air Tuareg, akin to the

ancient Berber Massūfa from Walata, is thick and is normally eaten with milk. Sometimes the Tuareg add to their millet porridge various sauces made of mulokhiya (malūkhiyā, Corchorus tridens), onions, red pepper, butter and water. Such porridge can also be made from barley or from the seeds or roots of wild plants; see Nicolaisen, Ecology and culture, 243.

243 Barth, Reisen, III, 260 (Cass, II, 447).

244 This is not couscous proper (kuskusū in Arabic) which means a kind of paste of flour kneaded with water and dried in the sun before cooking (see Dozy, Suppl., II, 468) and generally cooked in steam, but a kind of porridge made from the grain of fonio, which is so small that it may be mistaken for coarse meal. This type of couscous made from fonio is still prepared in Maouri, on the borders of the Songhai and Hausa area (see Piault, La vie quotidienne de la femme Maouri, 25). Couscous proper was prepared in the western Sudan from ground millet. In Maouri various kinds of real couscous are also known. One of these, known as Tuwon has'ii, pearl-millet couscous, is prepared as follows: grain is poured into a wooden mortar, sprinkled with water and pounded to remove the bran. The grain is then pounded and ground again to obtain flour mixed with coarse meal. The flour is sieved off, and the meal which remains on the sieve is poured into boiling water and cooked; when it is cooked, the flour is added and mixed in, and cooking continued with the saucepan covered (see Piault, La vie quotidienne de la femme Maouri, 28-9). Another kind of couscous is prepared from Guinea corn (sorghum) or daawaa. It can be made with either soaked or unsoaked grain. When made with soaked grain, it is called tuwon yaa mii, and is prepared as follows: Guinea corn is ground to remove the bran, and crushed; the grain so prepared is put in water for one or two days to sour, then rinsed and dried in the sun. The grain so prepared is ground in a mortar to flour, which is then put into boiling water. After it has been boiled for an hour, more flour is added until the couscous reaches the required consistency. The method of preparing couscous from unsoaked Guinea corn is similar (see Piault, La vie quotidienne de la femme Maouri, 30-1). This is by no means the only way of preparing this food recorded for the western Sudan. Another method used by the Mandingoes on the Gambia river, as observed at the end of the eighteenth century, is described by Mungo Park: "In preparing their corn food, the natives use a large wooden mortar called a palloon, in which they bruise the seed until it parts from the outer covering or husks, which is then separated from the clean corn by exposing it to wind; nearly in the same manner as wheat is cleared from the chaff in England. The corn thus freed from the husk is returned to the mortar, and beaten into meal, which is dressed variously in different countries, but the most common preparing of it among the nations of the Gambia is a sort of pudding, which they call Kouskous. It is made by first moistening the flour with water, and

then stirring and shaking it about in a large calabash or gourd, till it adheres together in small granules, resembling sago. It is then put into an earthen pot, whose bottom is perforated with a number of small holes; and this pot being placed upon another, the two vessels are luted together, either with a paste of meal and water, or with cows' dung, and placed upon the fire. In the lower vessel is commonly some animal food and water, the steam or vapour of which ascends through the perforations in the bottom of the upper vessel, and softens and prepares the Kouskous, which is very much esteemed throughout all the countries that I visited. I am informed that the same manner of preparing flour is very generally used on the Barbary coast, and that the dish so prepared is there called by the same name. It is therefore probable that the Negroes borrowed the practice from the Moors" (Travels, 10-11).

245 Edrîsî, Description de l'Afrique, Arabic text, 37; transl., 43-4. Al-Idrîsî when he speaks of the stones for grinding these roots is certainly thinking of saddle querns of the kind still found in most of the camps of the northern Tuareg. Such a saddle quern consists of two natural stones which are roughened at intervals so that they grind effectively. The saddle quern is the only grinding instrument among the Kel Ajjer; it is also known in Aïr (Nicolaisen, Ecology and culture, 242, fig. 179).

246 Aboulféda, Géographie, Arabic text, 156-7; transl., II, part 1, 220. It seems, however, that the situation was different among other pastoral groups of the Sahara Berbers. At present, at least, all the northern Tuareg — the Kel Ajjer and Kel Ahaggar — use for their ordinary food, bread made from wheat and barley flour as well as that made from the flour of wild seeds and roots, while the Aïr Tuareg use such bread very seldom (see Nicolaisen, Ecology and culture, 236, 237, 239). The bread traditionally baked by the Tuareg differs from Arab bread in being baked not from dough, but from a thin paste of flour and water. Here is a description of the baking of such bread (called by the Ahaggar Tuareg taġella), given by Nicolaisen (238-9): "A heavy fire is lit in a shallow depression (about 25-30 cms in diameter and 8-10 cms deep) made into fine-grained sand. When this heavy fire has burnt down, the embers and most of the ashes are moved [to the edge of the depression]. . ., and the thin porridge or gruel of flour and water [with a little salt] is poured out into the depression . . . a bunch of dry grasses . . . [is lit]over the gruel [to harden its surface], and it is then covered with hot fine-grained sand, ashes, and embers, [in this order]. [If there are not enough embers for baking], a small fire may be lit on top of the sand and ashes covering the gruel-bread, which is taken out after about twenty minutes to be turned and baked in the same way on the other side for a few minutes. [When baking is completed], the bread is finally removed to be washed in water. It is broken into pieces and eaten from a large wooden bowl with liquid butter. It is eaten with wooden spoons". See also

Gast, Alimentation, 76-7 and passim.

247 Ibn Batoutah, Voyages, IV, 401. This could also mean genuine wheat bread made with leaven, like that served at Jenne to Caillié (Journal, II, 223). Bread of this kind, dried in the oven, was offered to Caillie for his journey. It was eaten dipped in water, with a good deal of butter and honey (ibid., 227). It seems that these must be takoula (takula), biscuits of wheat-flour baked in a stove, and very hard, with which the caravans travelling from Timbuctu across the Sahara to North Africa are still supplied to this day (see Puigaudeau, Le sel du désert, 72). On the other hand, Ibn Baṭṭūṭa may have had in mind a kind of pancake such as are still eaten by the people of the western Sudan, made from millet flour leavened in a special way and fried like doughnuts; they are eaten either sweet or salt, with a sauce made from meat, vegetables, flavourings and shea butter. For this kind of pancake, see Les plantes alimentaires, 75, based on material collected by Pales and Mme Faucher. The same source includes also a description of the method of making a kind of cake, practised by the people of the western Sudan; this is made of unleavened dough and baked in an oven (Les plantes alimentaires, 76). Possibly the "loaves" referred to by Ibn Baṭṭuṭa may have been cakes like this.

248 Jean-Léon l'Africain, Description de l'Afrique, 465. This probably refers to a pancake-like food eaten by the Songhai with sour milk (hauru-kogu). See Rouch, Les Songhay, 17. Pancakes were noted at Jenne by Caillié (Journal, II, 194).

249 Jean-Léon l'Africain, Description de l'Afrique, 471.

250 On the plateau near Arawan.

251 Jean-Léon l'Africain, Description de l'Afrique, 38.

252 Ibid., 38-9.

253 Fernandes, Description, 82-3.

254 For unleavened wheat and barley bread baked in the oases of the Sahara, see Briggs, Tribes of the Sahara, 238. Bread was also baked from sorghum flour, in a pancake-like form (see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 46.

255 El-Bekri, Description de l'Afrique, Arabic text, 164; transl. 310.

256 Ed-Dimichqui, Cosmographie, 239; Manuel de la cosmographie, 339.

257 Barth, Reisen, V, 703 (Cass, III, 759). In the Berber dialect of the Zenaga in Mauritania, pancakes are called tegullé, while the Tuaregs from Ahaggar call them taǧella (see Broussais, "Recherches", 381). The Bozo on the Bani river call bread takula (see Monteil, "La langue des Bozo", 331). The people of Wargla use a similar name, tak'ellit (takellit), for the dish consisting of drin-seed (Aristida pungens) boiled with sour milk, beans and meat-broth (see Doreau, Considerations actuelles sur l'alimentation, 10).

258 Here is a description of qaṭā'if as it was made in the middle of the last century in Arab countries: a well-kneaded

dough made from the best flour is spooned into moulds which have been put in an oven and filled with melted butter or sesame oil. They are then put with an iron shovel on to a metal plate and topped with honey or grape jam. Sometimes the dough is made up of many layers filled with a mixture of nuts and spiced honey (see Dozy, Suppl., II, 376). The Arabic historian al-Masʿūdī (tenth century) mentions qaṭaʾif filled with almonds and refined sugar floating in nut oil (see al-Maçoudi, Prairies, VIII, 238). Wahrmund (Handworterbuch, II, 508) translates Arabic qaṭaʾif as "Nusskonfekt, Nudeln" (nut sweets, noodles).

259 Wahrmund (Handworterbuch, I, 471) translates jauzīnaj (the word jauzīnaqāt in al-Bakrī's text is the plural of this) as "Nusskonfekt". It seems that this sweetmeat was rather like those used in modern times by the people of the central Niger plateau, referred to by Desplagnes (Le plateau central nigerien, 229). They are made from honey and groundnut flour and flavoured with pimento. It is highly probable that groundnut — a plant of American origin — has replaced Bambara groundnut as the source of the flour in this recipe.

260 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300.

261 Barth, Reisen, II, 463 (Cass, II, 105; but the German edition adds "of wheat, honey and butter"); Nachtigal, Sahara und Sudan, I, 579. It is also possible that this is a reference to a kind of millet pancake, of the type still eaten by the peoples of the Lobi group in West Africa (see Labouret, Les tribus du rameau Lobi, 107-8). In the eastern Sudan, the name is applied to a kind of sweet pancake.

262 Barth, Reisen, II, 436 (Cass, II, p. 87). Possibly this also refers to sweetmeats of the kind eaten about the middle of the last century in Wadai; Barth (Reisen, III, 525: Cass, II, 662), mentions among others, killikāb, a cake made from dukhn and honey, matābba, made from rice and honey, and kāk — cakes made from dukhn or rice with butter, honey and dates.

263 Waitt, "Yams", 1-2; Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 365; Dalziel, The useful plants, 488-93; Cobley, Botany of trop. crops, 177-8; Bois, Plantes, I, 475-7; Russell, "West African crop plants", 2, 4. Mauny (Tableau, 246) mentions the existence of 200 varieties of yam.

264 For the preparation of yam porridge in West Africa, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 367. The Yoruba in southern Nigeria, where yam is the principal foodstuff, prepare it in the following way: the yam tubers are peeled, thinly sliced, boiled in water and dried for several days, after which they are pounded in a mortar, sieved, and again left to dry. The flour so obtained is added slowly to boiling water and stirred until the porridge thickens. See Bascom, "Yoruba cooking", 126, 128.

265 Ibn Batoutah, Voyages, IV, 398-9.

266 Mauny, "Notes", 703-4.

267 Ibid.; for this and other names for yam in West Africa, see also Dalziel, The useful plants, 488-93; Mauny, Tableau, 451.

268 Cobley, Botany of trop. crops, 180-1.

269 Bois, Plantes, I, 484; Cobley, Botany of trop. crops, 177.

270 Bois, Plantes, I, 485.

271 Waitt, "Yams", 2. Two varieties are known to the Malinke of the Republic of Guinée: budé (wild), and bodu (cultivated). See Dalziel, The useful plants, 491.

272 Bois, Plantes, I, 487; Cobley, Botany of trop. crops, 179; Waitt "Yams", 2.

273 Dioscorea dumetorum, sometimes called "bitter yam", grows wild on the lower Niger, in the country of the Yoruba, who call it gudugudu, and are aware of its poisonous nature. There is a local proverb saying "gudugudu is no use for making flour" (Bascom, "Yoruba food", 44 and footnote 8).

274 Labouret, "Les Manding", 40.

275 Baumann, Thurnwald, Westermann, Völkerkunde, 340.

276 Ibid., 351.

277 Wendeix, "Monographie du pays Senoufo", 651. Further north, yam is cultivated in the central Niger plateau (near Bandiagara and Hombori): see Desplagnes, Le plateau central nigérien, 229.

278 This probably refers to the storing of yams in the fields, as is done for example by the Gouro in the central Ivory Coast. See Meillassoux, Anthropologie économique des Gouro, 121. The tubers of taro are similarly treated in West Africa (Thomas, "La conduite négro-africaine du repas", 590).

279 Al-ᶜOmarī, Masālik, 61.

280 Baumann, Thurnwald, Westermann, Volkerkunde, 301-2.

281 Ibid., 302. For the festivities associated with yam harvesting celebrated with dancing, drinking and offerings to fetishes, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 366-7.

282 Unless of course this was a case of punishment for digging yams before the ritual celebrations, which could also be implied by al-ᶜOmarī's account.

283 Gamble, The Wolof, 29, 37.

284 Gunn, Pagan peoples, 70.

285 Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 24, 25.

286 Bascom, "Yoruba food", 45.

287 Barth, Reisen, II, 398-9 (Cass, II, 58); Nachtigal, Sahara und Sudan, I, 664

288 For Voandzeia, its domestication and its significance in the economy of African peoples, see Bois, Plantes, I, 166-70; Dalziel, The useful plants, 269-71; Cobley, Botany of trop. crops, 162-3; Murdock, Africa, 69; Russell, "West African crop plants", 1, 4; Baker; "Comments", 2-3; Steentoft-Nielsen, Introduction, 122. For the part played by Bambara groundnuts in the food of the West African peoples, see Baumann, Thurnwald, Westermann, Völkerkunde, 322, 340, 351. Among the Wolof, the cultivation of this plant is now of only minor importance. See Gamble, The Wolof, 29. At the present time, Voandzeia subterranea is cultivated in the following areas: in the Coniagui country in northern Guinée, in the southern part of the western Sudan (modern Mali), throughout Upper Volta, in northern Ivory Coast and in the western part of the Republic of Niger and in parts of Nigeria. See Tardieu, "Les cultures d'appoint", 23; Morgan, Pugh, West Africa, 327, 662. According to Labouret ("Les Manding", 61), Voandzeia is now one of the principal edible plants cultivated by the Mandingoes. According to information from M. Cissoko, the Bambara groundnut is grown nowadays throughout the west Mali savannah.

289 Ibn Batoutah, Voyages, IV, 392. The eating of the roasted grain of "pistachio pea", no doubt Voandzeia subterranea, by the people of Bambuk, is attested in the second half of the eighteenth century by Golberry (Travels in Africa, I, 331). The medieval Arabic authors do not say anything about obtaining oil from Bambara groundnuts, as has been done in modern times in Hausaland. See Smith, Baba of Karo, 16.

290 Mauny, "Notes", 724; Tableau, 244. Mauny also quotes references by Fernandes to mancarras, "whose fruits develop underground", in Senegal, Casamance and Sierra Leone.

291 Nachtigal, Sahara und Sudan, I, 623, 656, 663 (eaten raw, in sauce, roasted, and sometimes even in the form of porridge).

292 Barth, Reisen, II, (this passage is omitted in the English version). Dalziel (The useful plants, 270) lists the following foods made with Bambara groundnuts in West Africa: (1) groundnuts cooked fresh (according to Tardieu, "Les cultures d'appoint", 26, they are boiled in salted water); (2) roasted groundnuts pounded and eaten, or added in this form to other food (e.g. soups); (3) cakes made of Voandzeia flour with oil, salt, red pepper etc. and roasted — these cakes, probably the same as those described by Ibn Baṭṭūṭa, are still made in West Africa; they are mentioned by Tardieu ("Les cultures d'appoint", 27); he points out that they are now made in upper Ivory Coast and in Togo; they were also made in Hausaland, where cakes made from Voandzeia flour called bukuru, eaten only by children, are mentioned in Imam Umaru's account (see Mischlich, Kulturen im Mittel-Sudan, 17-18). Imam Umaru also mentions Bambara groundnuts (the nut, kwaruru; the plant, gurjiya), roasted, pounded to flour and eaten with oil (Mischlich, ibid., see also Smith, Baba of Karo, 16).

Among other references to the consumption of Bambara groundnuts, we may mention one by Caillié (Journal, II, 124 and 159) to the eating of boiled and roasted groundnuts early in the nineteenth century near Timbala and near Segu, in a country originally belonging to the Bambara. These cakes made from Bambara groundnuts and a purée made from these groundnuts in Maouri are mentioned by Piault (La vie quotidienne de la femme Maouri, 25).

293 Ibn al-Fakîh, Kitâb al-boldân, 87; Kubbel, Matveev, Arabskiye istochniki I, 64, 83.

294 In present-day Morocco, the word lūbiyā is used for all kinds of kidney beans: see Renaud, Colin, Tuhfat al-aḥbāb, 11, note 16.

295 For the various kinds of African cowpeas (especially Vigna unguiculata and Dolichos lablab), their domestication and their importance in the economy of the African people, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 284; Bois, Plantes, I, 165; Dalziel, The useful plants, 240, 266-9; Cobley, Botany of trop. crops, 134, 146-8; Murdock, Africa, 68; Stanton, "Varietal variation", 5; Baker, "Comments", 2; Baumann, Thurnwald, Westermann, Völkerkunde, 340. According to Tardieu ("Les cultures d'appoint", 11), in present-day Senegal, Mali and the Niger Republic, the following varieties of Vigna are cultivated: Vigna sinensis, Stickm., V. unguiculata Walp. and V. sesquipedalis, and the following varieties of Dolichos: Dolichos lablab L. (now Lablab niger, see Steentoft-Nielsen, Introduction, 122), and D. biflorus.

296 According to Tardieu ("Les cultures d'appoint", 19), cowpea, cultivated in the Mediterranean basin, was introduced by the Arabs on the western coast of Africa, and its cultivation spread by Negroes who had been converted to the Moslem faith, as they went deeper and deeper into the forest zone of West Africa. This does not seem quite correct since the first reference to the cultivation of cowpea relates to the historic Ghāna (in the borderlands of Mali and Mauritania) in the period preceding its Islamization (early tenth century). It must be added, however, that Arab authors sometimes confuse cowpea with other leguminous plants and possibly even with Bambara groundnuts. On this subject, see also Mauny, Tableau, 243-4.

297 Jacut, Geogr. Wörterbuch, I, 400. Yāqūt's information is probably correct, since kidney beans are still grown in many parts of Mauritania, including the Atar oasis, where they are sold in the market under the name of adelagan (see Naegele, "Notes", 8).

298 The same passage in al-Muhallabī is also quoted by Abu 'l-Fidā'. See Aboulféda, Géographie, Arabic text, 125; transl., II, part I, 173.

299 Ibn al-Fakîh, Kitâb al-boldân, 87.

300 El-Cazwini, Kosmographie, 11.

301 Jacut, Geogr. Wörterbuch, I, 821-2; Dammann, Beiträge, 53.

302 Ibn Batoutah, Voyages, IV, 394. In the valley of Tamourt en Naaj (Tamurt en-Naᶜaj) in southern Mauritania (Tagant), kidney beans are still an important part of the food of the local people. See Toupet, "Tamourt en Naaj", 98. This country lies within the territory of the historic Ghāna. Interesting information on the use of cowpea flour by West African peoples in the preparation of various foods is included in Dalziel, The useful plants, 268. Peoples of the Lobi group, among others, make a kind of fried pancake from pea flour. See Labouret Les tribus du rameau Lobi, 107.

303 Al-ᶜOmarī, Masālik, 61.

304 Baumann, Thurnwald, Westermann, Volkerkunde, 340; Labouret, "Les Manding", 61.

305 Ca da Mosto reports kidney beans "the largest and finest in the world" in the kingdom of Senaga (Senegal) (Voyages, 30). The cultivation of kidney beans on a large scale on the lower Senegal was reported in the middle of the eighteenth century, by Adanson (Voyage to Senegal, 71). They are still cultivated and eaten by the present-day Wolof (Gamble, The Wolof, 29, 37).

306 Rouch, Les Songhay, 18.

307 Kubbel, Matveev, Arabskiye istochniki, II, 216. The Russian editors wrongly translate qaṭani as "beans".

308 Wahrmund, Handworterbuch, II, 507; Dozy, Suppl., II, 377.

309 Monteil, "La langue des Bozo", 331. In the language of the Wolof, the plant is called sab or seb (sep), possibly akin to sapura. Kidney beans (niébé) are cultivated near Bandiagara and Hombori in the bend of the Niger. See Desplagnes, Le plateau central nigérien, 229. In addition, according to M. Cissoko, a young Mali historian to whom I owe much information about the food of the present-day people of Mali, kidney beans (niébé) are grown throughout the Mali savannah, particularly in the valleys of the Senegal and Niger.

310 Gunn, Pagan peoples, 69; Barth, Reisen, II, 398 (Cass, II, 57); Nachtigal, Sahara und Sudan, I, 657. In northern Nigeria, cakes were still being made from kidney beans at the turn of the century: see Smith, Baba of Karo, 52.

311 Jacut, Geogr. Wörterbuch, II, 933.

312 Nachtigal, Sahara und Sudan, I, 414; II, 168; III, 184, 261. In the early nineteenth century, kidney bean pap and fish were the principal foodstuffs of the people of Bornu,- where kidney beans were called gafouly. See Denham, Clapperton, Oudney, Discoveries, Denham's journal, 317; but see Dozy, Suppl., II, 384 under qafūlī, "guinea corn".

313 Bois, Plantes, I, 99-100; Renaud, Colin, Tuḥfat al-aḥbāb, 35, note 76.

314 Reinhardt, Kulturgeschichte der Nutzpflanzen I, 271; Bois, Plantes, I, 100.

315 Ibn Sa^{c}īd is confusing the Niger with the Nile, a common error with medieval Arab geographers.

316 Fagnan, Maghreb, 21. It is also possible that the Arabic word fūl is used here as an equivalent for cowpea; this is its meaning in present-day colloquial Arabic (see Wahrmund, Handwörterbuch, II, 441; Dozy, Suppl., II, 290). Ibn Sa^{c}īd may also have used this word for Bambara groundnuts. It must be remembered that in the Arabic dialect spoken east of Lake Chad and in Wadai, fūl means groundnuts (see Carbou, Méthode, 194); this American species displaced the indigenous African earthnuts when it was introduced into West Africa.

317 Barth, Reisen, II, 394, 398 (Cass, II, 54, 58). It is possible that broad beans were brought to the banks of the Niger from the north, either from the Fezzan, where they are recorded by Nachtigal (Sahara und Sudan, I, 127), or from Egypt, where they were known in remote antiquity. On this subject see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 271. It is interesting to note that broad beans (Vicia faba) are sometimes grown in the gardens of Ahaggar; we owe this information to Nicolaisen (Ecology and culture, 193), though he mistakenly identifies Vicia faba as kidney beans (Vigna sp.). It is possible that in the spread of broad bean cultivation in West Africa, some part was played by the commercial intercourse between this area and the oasis of Wargla, where broad beans are still grown, as they are in the neighbouring Mzab (see Doreau, Considérations actuelles sur l'alimentation, 11-12 and 25).

318 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 263-5; Bois, Plantes, I, 11, 97-8.

319 Jacut, Geogr. Wörterbuch, I, 821-2; Dammann, Beiträge, 53.

320 According to Tardieu ("Les cultures d'appoint", 11), Cicer arietinum is now cultivated in the western Sudan. It is possible that chick-pea cultivation reached the western Sudan with the merchants from Wargla, where this pulse (dried) is still sold in the markets (see Doreau, Considérations actuelles sur l'alimentation, 12.

321 Dozy, Suppl., II, 456; Bois, Plantes, I, 102. In current colloquial Arabic, however, kursanne or karsane is used also for a plant used medicinally — see Wahrmund, Handwörterbuch, II, 570.

322 Aboulféda, Géographie, Arabic text, 125; transl., II, part 1, 174. For the occurrence of lentil in the western Sudan see Murdock, Africa, 23. It must be remembered that Lens culinaris is found in the gardens of Ahaggar. The local Tuareg call the plant elredes (Nicolaisen, Ecology and culture 193). This name is of Arabic origin (from Arabic el-^{c}edes/al-^{c}adas, "lentil") which suggests that the Ahaggar Tuareg became acquainted with this plant through the Arabs. It is also possible that lentil cultivation was introduced into Audaghast by Ibāḍite merchants from Wargla who were in close contact with the town in the early Middle Ages. Lentils are still sold in

the markets of Ibāḍite Mzab, neighbour to Wargla (see Doreau, Considérations actuelles sur l'alimentation, 25).

323 Dozy, Suppl., I, 348 (see under khubbāz) and II, 614 (see under mulūkhiyā); Bois, Plantes, I, 76-7; Renaud, Colin, Tuḥfat al-aḥbāb, 181, no. 424 and 32, no. 70; Dalziel, The useful plants, 96.

324 Al-ᶜOmarī, Masālik, 61, 103.

325 Barth, Reisen, IV, 306 (Cass, III, 209).

326 Ibid., III, 399 (Cass, II, 559).

327 Nachtigal, Sahara und Sudan, I, 657; according to Denham (Denham, Clapperton, Oudney, Discoveries, Denham's journal, 316) millet porridge, with melted fat and some mulūkhiyā (meloheia in the text) was served as a luxury dish known as kaddell.

328 Nachtigal, Sahara und Sudan, I, 414; according to Nicolaisen (Ecology and culture, 203), two species of Corchorus are grown in the gardens of Air, one of which, Corchorus olitorius has the Tuareg name ékabewwa, while the second, Corchorus tridens, is called malokhiya. For the preparation of sauces, the local Tuareg use the powdered seeds of the first and the dried and powdered leaves of the second species.

329 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 317-8; Bois, Plantes, I, 499-500; Cobley, Botany of trop. crops, 312; Dalziel, The useful plants, 485.

330 Of the seven climates (Arabic iqlīm), i.e. parallel zones, into which this geographer divides the inhabited part of the world.

331 Edrîsî, Description de l'Afrique, Arabic text, 5; transl. 6. Onions are grown now, and were certainly grown formerly, to the north of Senegal. We have information about the cultivation of onions in the Atar oasis in Mauritania and their sale in the market in Atar (see Naegele, "Notes", 8).

332 Gamble, The Wolof, 37.

333 Al-ᶜOmarī, Masālik, 61.

334 On this subject, see Ibn Batoutah, Voyages, IV, 397 and passim.

335 Barth, Reisen, IV, 403-4 (Cass, III, 274). According to Dalziel (The useful plants, 485), lawashi means onion in the Hausa Gobir dialect, while the corresponding word in the dialect of Sokoto is gabu. Early in the nineteenth century, onions were cultivated in large quantities in areas occupied by the Mandingoes, and particularly by the Bambara; this is attested by Caillié, who, in his account of his travels, notes how carefully this vegetable was cultivated, grown in gardens at many of the places both large and small visited by him, including Jenne; he notes also the varying sizes of onions there: (Caillié, Journal, I, 413 and II, 127-8, 198, 218). Onions grown at Jenne were imported into Timbuctu (ibid., II, 313).

336 Monteil, "La langue des Bozo", 331.

337 Barth, Reisen, V, 683 (Cass, III, 753). Onions are now one of the vegetables most cultivated in the Songhai country; their local name albasa is of Arabic origin (Arabic al-basal, with the Arabic definite article al-), which may mean that the cultivation of this vegetable was introduced by the Arabs. For onion cultivation by the Songhai, see also Rouch, Les Songhay, 18. Onions also play an important part in the food of the people of Maouri, on the borders of Hausaland; they are used as an important flavouring added to a sauce known as miyàa. Onions are called ʾal-basàa in the language of the people of Maouri, akin to the corresponding Songhai word (see Piault, La vie quotidienne de la femme Maouri, 29-30, 34. The Ahaggar Tuareg who grow Allium cepa in their gardens call it éfeleli. They add it pounded to the vegetable sauce which they pour over their millet porridge. The plant is also known in Aïr (Nicolaisen, Ecology and culture, 243-4). Onion growing was introduced into Ahaggar by cultivators who came from Tuat (Gast, Alimentation, 110-12).

338 Barth, Reisen, V, 298 (Cass, III, 535).

339 Baumann, Thurnwald, Westermann, Völkerkunde, 352.

340 Jean-Léon, l'Africain, Description de l'Afrique, 54.

341 Barth, Reisen, II, 106; IV, 159, 173; V, 320 (Cass, I, 483; III, 119, 127, 549). On the importance of onion cultivation in Hausaland and adjacent areas nowadays, see also Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 25; Gunn, Pagan peoples, 15. In the first decades of the nineteenth century, there were large plantations of onions round the town of Kano, owned by the governor of the town — see Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 59. There were also onion plantations at that time on the way from Kano to Sokoto (ibid., 73).

342 In the eleventh century, the people of the city of Tunis cultivated a variety of onion known as the Calabrian, as large as an orange — see El-Bekri, Description de l'Afrique, Arabic text, 41; transl. 89. The mediation of the Wargla oasis, which was so closely associated with the countries of the western Sudan, may be suggested in connection with the possible relationship between onion cultivation in West Africa and cultural influences from North Africa. Indeed, according to Doreau (Considérations actuelles sur l'alimentation, 12), onions are among the vegetables sold in the market at Wargla. M. Cissoko stresses the great importance of the cultivation of onions in the valleys of the Senegal and the Niger.

343 Nachtigal, Sahara und Sudan, III, 154.

344 Chapelle, Nomades noirs, 122.

345 Nachtigal, Sahara und Sudan, I, 567.

346 Barth, Reisen, II, 398 (Cass, II, 57). It is interesting to note that according to Rohlfs (Quer durch Afrika, II,

10), onions were grown in the fields in Bornu, which seems to indicate that they were cultivated in large quantities. On the other hand we know that in the early nineteenth century, onions could be bought only near the larger towns in Bornu: see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 318.

347 Barth, Reisen, III, 399 (Cass, II, 559).

348 Arkell, "The influence of Christian Nubia", 1-3.

349 Mauny, "Notes", 712. These onions were introduced by the Portuguese.

350 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 317-18; Bois, Plantes, I, 505-7.

351 Al-ᶜOmarī, Masālik, 61.

352 Leca, Les pêcheurs de Guet N'Dar, 309. It is possible that the cultivation of garlic reached West Africa from Egypt through Nubia and the Lake Chad area. Near the town of Abeché (Abesher) in Wadai (on this route) Nachtigal notes extensive cultivation of both garlic and onions (Sahara und Sudan, III, 154); also in Bornu, further along the same route, there were garlic plantations in the fields in the second half of the nineteenth century: see Rohlfs, Quer durch Africa, II, 10. Further west still, garlic as well as onions is used to make sauces in the Maouri country, in the south of the present-day Republic of Niger. See Piault, La vie quotidienne de la femme Maouri, 29-30. The word for garlic in the Bambara language, tumé, which is clearly of Arabic origin, suggests that it was brought to the Niger by the Arabs; see also Dalziel, The useful plants, 485. Thanks to information recently obtained from M. Cissoko, I am able to state that the cultivation of garlic is fairly common nowadays in the river valleys and in the Sudanic savannah of Mali. It is possible that merchants from the Maghrib had already brought the cultivation of garlic with them to West Africa in the early Middle Ages; it could also have been brought by merchants from Wargla, where the plant is now grown (see Doreau, Considérations actuelles sur l'alimentation, 12).

353 Al-ᶜOmarī, Masālik, 61. Cabbage is cultivated by the native population of West Africa mainly in the Saharan oases and in some areas on the upper Niger (Dalziel, The useful plants, 23). M. Cissoko from Mali informs me that the cultivation of cabbage is nowadays widespread in the river valleys and on the Sudanic savannah of this country. The cultivation of cabbage was undoubtedly introduced by the Arabs, as witness, e.g. its name in the Songhai language, kurumbu (from Arabic kuranb or kurunb). The Ahaggar Tuareg who also grow Brassica oleracea in their gardens, call this plant aharet. See Nicolaisen, Ecology and culture, 193.

354 Bois, Plantes, I, 30-3; Renaud, Colin, Tuḥfat al-aḥbāb, 101. The route from Morocco passed through Sijilmāsa (in present-day Tafilelt), this town being, as we know, the

principal North African centre of trade with the Sahara and the western Sudan during the period corresponding to the European Middle Ages. It is interesting to note that cabbage seeds were brought to the town of Jenne, in the territory of the former state of Mālī, in the early nineteenth century — from Tafilelt. On this subject, see Caillié, Journal, II, 205. It is also possible that familiarity with the cultivation of cabbage came to Mālī through the mediation of the Ibāḍite merchants from Wargla, whose route to the western Sudan passed through Sijilmāsa. For cabbage cultivation in Wargla, see Doreau, Considérations actuelles sur l'alimentation, 12. Doreau also refers to the cultivation of cabbage in Ibāḍite Mzab, in the neighbourhood of Wargla (see ibid., 26). Cabbage was also cultivated in ancient Egypt from the sixth century B.C. (see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 297); it seems doubtful, however, if the cultivation of cabbage could have reached the western Sudan from Egypt, if only because it is not known in the areas between — Darfur, Wadai or the Lake Chad area.

355 Al-ᶜOmarī, Masālik, 44, 61.

356 Bois, Plantes, I, 354-5.

357 Reference is made in Nachtigal (Sahara und Sudan, I, 128, 214) to the cultivation of the egg plant in the Fezzan, including its southern borders. The plant was also cultivated, according to Rohlfs (Quer durch Afrika, I, 73) at Ghadames. In the Middle Ages both the Fezzan and Ghadames were inhabited by the Ibāḍites who remained in active commercial contact with the central and western Sudan. It is also not impossible that the people of Mālī learned the cultivation of aubergines through the mediation of Wargla, where (as in neighbouring Mzab) this plant is now grown (see Doreau, Considérations actuelles sur l'alimentation, 12, 26).

358 For the egg plant as part of the food of the Yoruba in southern Nigeria, see Bascom "Yoruba food", 47.

359 Gamble, The Wolof, 29, 37. For the cultivation of egg plant and its consumption in various forms by the indigenous peoples of West Africa, see Dalziel, The useful plants, 433-4, where the names for this plant in the languages of the Wolof, Bambara, Mandingo, Hausa and Kanuri are quoted, showing that egg plant is also cultivated in Senegal, Guinée, Mali, Hausaland and Bornu. According to M. Cissoko, the egg plant is also grown nowadays in the river valleys and on the Sudanic savannas of the modern state of Mali. It is also well known in modern Ghana.

360 Al-ᶜOmarī, Masālik, 61.

361 Renaud, Colin, Tuḥfat al-aḥbāb, 163-4. According to Caillié (Journal, II, 205), turnip seed was brought to the town of Jenne (in the territory of the former state of Mālī) where the plant was cultivated early in the nineteenth century, from Tafilelt, i.e. from the neighbourhood of the former Sijilmāsa. Turnips are also sold in the

markets of Wargla and Mzab, oases which played a great role in the trade between the Maghrib and West Africa both during the Middle Ages and in the sixteenth century (see Doreau, Considérations actuelles sur l'alimentation 12, 26). It must be emphasized that turnip is now also grown in the gardens of Ahaggar; see Nicolaisen, Ecology and culture, 193.

362 According to the western Sudanic tradition included in Ta'rīkh al-Fattāsh (Tarikh al-Fettach, Arabic text, 62-3 and French translation, 119), the gardens near Timbuctu which were believed to have been the property of Jewish groups, formed a very important centre of vegetable cultivation. After the downfall of the Jews (perhaps the persecution of Jews in the fifteenth century associated with the activities of al-Maghīlī?), these gardens decayed, and in 1496-7 the town Tendirma was founded on the site.

363 Baker, "Comments", 3.

364 Bois, Plantes, I, 185-6; Hutchinson, Dalziel, Flora, 180.

365 Ibid. For this plant see also Dalziel, The useful plants, 63-4.

366 Bois, Plantes, I, 189; Baker, "Comments", 2; Hutchinson, Dalziel, Flora, 177; Dalziel, The useful plants, 58-60; Murdock, Africa, 69. It is possible that the cultivation of pumpkins (and calabashes) was brought to the western Sudan by the Ibāḍite merchants from Wargla, where these plants are grown. For the sale of these vegetables on the markets of Wargla and neighbouring Mzab, see Doreau, Considérations actuelles sur l'alimentation, 12, 26.

367 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 6.

368 Gamble, The Wolof, 29, 37. A very sweet variety of pumpkin was cultivated in the gardens on the lower Senegal about the middle of the eighteenth century — see Adanson, Voyage to Senegal, 71. (The English translation renders giromons, "pumpkins" as "mushrooms".)

369 Al-ʿOmarī, Masālik, 61.

370 Ibid., 62, footnote 1.

371 Barth, Reisen, III, 140 (Cass, II, 341). Early in the nineteenth century, as attested by Caillié (Journal, II, 128-9), both pumpkin and calabash were cultivated near Oulasso on the way to Jenne, i.e. on the southern borders of the historic state of Māl. They are cultivated also in the bend of the Niger, near Bandiagara and Hombori (Desplagnes, Le plateau central nigérien, 229).

372 Barth, Reisen, III, 140. The words must be read as sagadê and kabeto, see Dalziel, The useful plants, 57. The reference is to the variety known as Cucurbita pepo.

373 Jean-Léon l'Africain, Description de l'Afrique, 471. It must be remembered that calabash (in Hausa, dumaa) is among the plants cultivated in the Maouri country; see

Piault, La vie quotidienne de la femme Maouri, 36-7. The people use calabashes to make kitchen utensils. According to Nicolaisen (Ecology and culture, 193), a kind of common melon (Cucurbita sp.) called tētakelt or tazemt is grown in the gardens of Ahaggar.

374 Jean-Leon l'Africain, Description de l'Afrique, 54.

375 Al-ᶜOmarī, Masālik, 45.

376 Reference is made in Rohlfs (Quer durch Afrika, I, 296, and II, 34, 65) and in Nachtigal (Sahara und Sudan, II, 752-3) to various kinds of ferry-boats made from hollowed-out pumpkins in Bornu; Barth also reports such ferry-boats in Bornu (Reisen, II, 253-4 and IV, 28 (Cass, I, 581, and III, 34). Another ferry-boat of this kind was observed and described in Hausaland, see Mischlich, Kulturen im Mittel-Sudan, 40. For the possibility of such a ferry-boat made of calabash, see also Mauny, Tableau, 234.

377 Barth, Reisen, II, 523 (Cass, II, 144).

378 Nachtigal, Sahara und Sudan, I, 664; II, 532. Pumpkins and calabashes were also cultivated in Tibesti and the neighbouring countries including Kawār, see Nachtigal, ibid., 414; II, 168; Rohlfs, Quer durch Afrika, I, 250. On pumpkins in Hausaland, see Smith, Baba of Karo, 41-2.

379 Cobley, Botany of trop. crops, 297-8.

380 See, for example, Bois, Plantes, I, 205.

381 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300.

382 Jean-Léon l'Africain, Description de l'Afrique, 54, 471.

383 Ibn Batoutah, Voyages, IV, 435. On this variety of cucumber, see Dozy, Suppl., II, 93, 273, 440. Faqqūṣ was cultivated in Bornu, where it was observed by Rohlfs (Quer durch Afrika, I, 346); he calls it fukus. For the meaning of faqqūṣ see also Renaud, Colin, Tuḥfat al-aḥbāb, 151. Mauny (Tableau, 448) associates the word ᶜinānī with the Songhai name for pumpkin-like plants, kani, and for melon, kankani. But is the word not derived from the Arabic proper name ᶜInān (ᶜInānī, "connected with ᶜInān", "coming from ᶜInān")? We may mention that the sultan of Morocco who sent Ibn Baṭṭūṭa on a diplomatic mission to the western Sudan in 1352 was called Abū ᶜInān. Possibly the cultivation of cucumbers was introduced into the western Sudan in the early Middle Ages by Ibāḍite merchants from Wargla, where according to Doreau (Considérations actuelles sur l'alimentation, 12), the plant is still grown.

384 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 6. The French translation erroneously interprets the Arabic word biṭṭīkh as "melon d'eau", water-melon.

385 Fernandes, Description, 112-3. For cultivated and wild melons in Senegal and modern Mali, see Dalziel, The useful plants, 56.

386 Fernandes, Description, 166, footnote 222. It must not be

forgotten that among plants grown in the Atar oasis in Mauritania and sold in the market there at the present time are the melon (Cucumis melo L.), here called el-bettīkh, as well as the water-melon (Citrullus vulgaris Schred.), here called fendi. See Naegele, "Notes", 6.

387 Ibn Batoutah, Voyages, IV, 387. It appears from information from M. Cissoko, that water-melon is commonly grown nowadays in Mali in the river valleys and on the Sudanic savannah.

388 Barth, Reisen, IV, 405 (Cass, III, 275).

389 Jean-Leon l'Africain, Description de l'Afrique, 471. Melons are grown at the present day in the gardens of Ahaggar and all over Aïr (Nicolaisen, Ecology and culture, 193-4, and 203).

390 Early in the nineteenth century, see Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 64, 138.

391 Cobley, Botany of trop. crops, 299.

392 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 339-41; Bois, Plantes, I, 206; Steentoft-Nielsen, Introduction, 165 (Colocynthis vulgaris). For the cultivation of various kinds of water-melon on the Senegal river, in northern Senegal, in Mali and in Mauritania, see Tardieu, "Les cultures d'appoint".

393 Baker, "Comments", 2.

394 Ibn Batoutah, Voyages, IV, 434. For the identification of this plant as water-melon, see Dozy, Suppl., I, 93.

395 Dalziel, The useful plants, 54.

396 Monteil, "La langue des Bozo", 331. For cultivated water-melons and pumpkins in the Niger bend, near Bandiagara and Hombori, see Desplagnes, Le plateau central nigérien, 229. The Fulani collect water-melons which grow wild in the country between Zinder and Agades (see Dupire, Peuls nomades, 62). For pumpkins, water-melons and melons in West Africa, see also Mauny, Tableau, 245.

397 Roberty, "Plantes banales", 444. The water-melon (Colocynthis citrullus) is grown in the gardens of Ahaggar and all over Air (Nicolaisen, Ecology and culture, 193 and 203). African pumpkins, cucumbers, melons and water-melons are the subject of a monograph by Hassib, Cucurbitaceae in Egypt.

398 I am using this term to mean sweet and acid fruits used for refreshment, not for oil-bearing fruits.

399 Edrîsî, Description de l'Afrique, Arabic text, 4; transl., 5.

400 Jean-Léon l'Africain, Description de l'Afrique, 54.

401 Ibid., 465.

402 Ibid., 469.

403 Ibid., 471.

404 El-Istakhrí, Viae regnorum, 40.

405 Jean-Léon l'Africain, Description de l'Afrique, 478.

406 Al-ᶜOmarī, Masālik, 94.

407 Ibid., 63.

408 Aboulféda, Géographie, Arabic text, 158-9; transl., II, part I, 223-4. This is corroborated by al-Qalqashandī (see Al-ᶜOmarī, Masālik, 43, footnote 6). In the nineteenth century the situation in Bornu was quite different, fruit trees being hardly cultivated there at all; on the other hand, there were a number of fruit trees of various kinds in the woods, the wild fruit of which was collected; see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 317-18; Rohlfs, Quer durch Afrika, II, 11.

409 Ibn Batoutah, Voyages, IV, 392.

410 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 207-8; Bois, Plantes, II, 171-2; Renaud, Colin, Tuḥfat al-aḥbāb, 175. Murdock (Africa, 23, 69) considers tamarind a tree of Sudan origin.

411 Al-ᶜOmarī, Masālik, 62. The Arabic alphabet makes it possible to correct the name written as zbyzwr to the inferred form žbyrwr, which may be read, according to the rules of Arabic spelling as žabbērūr or even zabbērūr (in Arabic recordings of foreign words the letter z often serves to replace the phoneme ž which is absent in the Arabic alphabet). The record thus amended is somewhat similar to the name of the tamarind fruit in the Fulani language: ja'b'bere (the suffix -ūr or -ūr(i) in the Arabic record is the Fulani suffix -uri, as in shaᶜiruri, from Arabic shaᶜīr, "barley". For the names of tamarind (both tree and fruit) in West African languages, see Dalziel, The useful plants, 200. The name of the tamarind tree in the Fulani language is now d'ammi (see Ba, Dieterlein, Koumen, 15). Mauny (Tableau, 229) identifies zbīzūr as néré (Parkia biglobosa), the "African locust-bean", with edible pulp but many seeds, much used for sauces.

412 Labouret, "Les Manding", 28. Caillié (Journal, II, 225) reports that at Jenne he drank a beverage made of tamarind fruit. Tamarind fruit were sold at the end of the nineteenth century in the market at Jenne — see Dubois, Tombouctou la mystérieuse, 189.

413 Roberty, "Plantes banales", 447, 452. Tamarind fruit is also sold in Mauritania, for example in the market at Atar, where the fruit, after peeling, is known as aganat. The pulp of tamarind dissolved in water with the admixture of gum arabic is a favourite drink, which is supposed to have some healing effect. Tamarind fruit consumed in Atar is imported from the Sudan, though the tree may also grow in Mauritania (see Naegele, "Notes", 8 and note 7).

414 Gamble, The Wolof, 26, 37.

415 Barth, Reisen, V, 217 (Cass, III, 480). Rouch (Les Songhay;

19) includes tamarind among the trees growing wild in Songhai country. The people collect tamarind pods and chew them between meals. It should be pointed out that in West Africa, tamarind is often cultivated for its fruit (see Steentoft-Nielsen, Introduction, 108. The Lobi people make a kind of cake from tamarind fruit; these cakes keep well. They are also used for preparing a drink which reduces fever — see Labouret, Les tribus du rameau Lobi, 113.

416 Barth, Reisen, V, 681 (Cass, III, 753); see also Renaud, Colin, Tuḥfat al-aḥbāb, 175.

417 Gunn, Conant, Peoples of the middle Niger, 35. Tamarind is used here as a flavouring for food. In the market in Garo-n-Bauchi, the capital of the former state of Bauchi in Nigeria, tamarind fruit, dissolved in water with rice meal added, was used as a refreshing drink — see Rohlfs, Quer durch Afrika, II, 159.

418 The eating of tamarind fruit in Bornu is attested by Nachtigal (Sahara und Sudan, I, 663), though he reports that it was of no great importance in the food of the indigenous population. According to Rohlfs (Quer durch Afrika, II, 11), tamarind fruit was used to produce a fruit drink, as was the baobab fruit.

419 Nachtigal, Sahara und Sudan, II, 168.

420 Barth, Reisen, III, 400 (Cass, II, 559). In another passage (III, 334; Cass, II, 508), Barth describes a tamarind drink, most refreshing and helpful to the feverish traveller, which he encountered at Máseñá, capital of Bagirmi. In addition to tamarind meal, this drink contained thinly sliced onion, honey and a fair amount of black pepper. For tamarind and its fruit, see also Dalziel, The useful plants, 200-2. The Arab writer al-Bīrūnī (973-1048), who heard of tamarind growing in the land of the Zenj on the East African coast, calls the tree ṣabār (see Kubbel, Matveev, Arabskiye istochniki, II, 139 and 142); is this name, which is not of Arabic origin, connected with zabbērūr recorded by al-ᶜOmarī?

421 For this tree and its fruit, see, for example, Bois, Plantes, II, 141-2; Dalziel, The useful plants, 200-2. According to Murdock (Africa, 69) the tree is of West African origin. According to Steentoft-Nielsen (Introduction, 138): "Blighia sapida (akee apple) has been extensively planted. It is found near villages and is planted for its fruit. . . . The aril around the seed is eaten."

422 Al-ᶜOmarī, Masālik, 62. But cf. Mauny, Tableau, 229.

423 According to Bascom ("Yoruba food", 47), before eating akee, the poisonous part of the fruit must be removed.

424 Dozy, Suppl., II, 428. This probably refers to another plant of the same name, mistaken by Gaudefroy-Demombynes, the editor of al-ᶜOmarī, for a tree of the Sudan (see al-ᶜOmarī, Masālik, 62, footnote 5). The word qūmī, which may also be read as qōmī, thus seems to be a corruption of

jokomi, the Mende name for Blighia sapida. For this name, see Dalziel, The useful plants, 331.

425 For the baobab, see Bois, Plantes, I, 76; Dalziel, The useful plants, 112-15.

426 For the eating of baobab leaves by peoples of the western Sudan, see Thomas, "La conduite négro-africaine du repas", 593.

427 El-Bekri, Description de l'Afrique, Arabic text, 177; transl., 331-2. According to Dalziel (The useful plants, 113), the pulp of the baobab fruit is used to make a food called dandare in the eastern part of Hausaland. It is also used to flavour food, and is sometimes eaten as pap or porridge. Dissolved in water and boiled, it is used to produce a beverage which is drunk after cooling. Dalziel also discusses the medicinal use of baobab fruit by West Africans.

428 Broussais, "Recherches", 208. For other names of baobab in West Africa see Adam, "Végétation", 164 (Wolof, goui; Fulani, boki). According to Nicolas (La langue berbere, 141), the Zenaga call the baobab tajmuht. Closest in form to the name of the baobab in the work of al-Bakrī, and to the names given by Broussais, are the names of the tree in the Zenaga language, which I discovered during my stay in Mauritania in May 1967, from oral information from my learned friend Mukhtārun Ḥāmidun, a Mauritanian scholar with a wide knowledge of this language. The name is tedomi(u) and the feminine singular derived from this: tedumiḍ. Mukhtārun Ḥāmidun also gave me the name of the baobab in the Arabic dialect of Mauritania (al-Ḥasanīya): teydūm, which undoubtedly comes from the Zenaga word.

429 Roberty, "Plantes banales", 445, 449. Baobab fruit and leaves are similarly eaten by the people of the Guidimaka area, once included in the historic states of Ghāna and Mālī. See Colombani, "Le Guidimaka", 378-9.

430 Al-ᶜOmarī, Masālik, 62.

431 Ibn Batoutah, Voyages, IV, 392. Some scholars (e.g. Ibn Baṭṭūṭa, Extraits 45, note 3), prefer to identify Ibn Baṭṭūṭa's fruit tree as Parinari excelsa, or Lanea acida.

432 Labouret, "Les Manding", 28. According to Caillié (Journal, I, 443), the people of Ouassoulo, near Bure (the "land of gold dust" of the old Arabic geographers) added dried and ground baobab leaves to sauces; they also ate the fruit of the tree, dissolving it in water or in milk — a food which was both light and nourishing. The pulp of the baobab fruit is eaten also by the people of the Hombori and Bandiagara area (in the Niger Bend), who eat the leaves as well. See Desplagnes, Le plateau central nigérien, 229.

433 Monteil, "La langue des Bozo", 330.

434 Ed-Dimichqui, Cosmographie, 240; Manuel de la cosmographie, 341.

435 Gamble, The Wolof, 28, 29, 37, 38. Lajaille (Voyage au

Sénégal, 66) records that in his time (1784-7) the Negro people near the Senegal river prepared baobab fruit, with the addition of water and sugar or honey, a most refreshing drink, probably the same medicine against fever mentioned by al-Bakrī.

436 See, for example, Gunn, Conant, Peoples of the Middle Niger, 35.

437 Barth, Reisen, II, 398 (Cass, II, 57); Rohlfs, Quer durch Afrika, II, 10, 11 (fruit drink of baobab fruit); Nachtigal, Sahara und Sudan, I, 657.

438 Barth, Reisen, III, 399 (Cass, II, 559).

439 Nachtigal, Sahara und Sudan, I, 663. Baobab fruit is still the subject of a lively trade between the people of the Guidimaka region and the Tekarir (Tukolors) of the Futa country in Senegal, who import the fruit of the baobab on a large scale — see Colombani, "Le Guidimaka", 379. At the end of the nineteenth century, baobab flour was on sale in the market at Jenne — see Dubois, Tombouctou la mystérieuse, 189.

440 Ibn Batoutah, Voyages, IV, 392.

441 Barth, Reisen, II, 249, 398 (Cass, I, 359; II, 57). This is confirmed by Nachtigal (Sahara und Sudan, I, 663), who reports that the fruit of bírgim (Diospyrus mespiliformis) was eaten in Bornu.

442 Surely this is a reference to the fruit of the caura tree, as recorded by Caillié (Journal, I, 259-60), who calls the tree "wild plum tree". Caillié, who saw the fruit on the banks of the Rio Nunes, in the Mandingo country, records that it was shaped like a plum and had a very succulent pulp, and was a favourite light food of the local people. Adanson (Voyage to Senegal, 96) noted trees at Portudal, south of Goree known by the name of sob (cf. Serer dyob, "black plum") which he considered a variety of plum (Pruna cerea L., var. vel) of an acid spicy flavour. Is this the makhét fruit (Boscia senegalensis), similar to a big plum, but containing a number of small pips, which occurs in the Lake Chad area and in Wadai (see Carbou, Méthode, 213)? It is also possible that the reference is to the "black plum" (Vitex Cienkowskii); see Dalziel, The useful plants, 456.

443 For Balanites aegyptiaca, a tree 20 to 30 feet tall, which grows wild in the desert in an area extending from the borders of the Sahara with the western Sudan all the way to Palestine and Arabia, see Bois, Plantes, II, 98; Hutchinson, Dalziel, Flora, 484; Dalziel, The useful plants, 309-11; Mauny, Tableau, 228. The numerous uses of the fruit and leaves of Balanites aegyptiaca, mostly as food, are discussed by Creack, "Les Balanites aegyptiaca", 578-93, and by Adam "Le baobab".

444 Fernandes, Description, 108-9, 164.

445 Colombani, "Le Guidimaka", 376. In the area round Nioro,

the fruit of Balanites is eaten by cattle — see Roberty, "Plantes banales", 446, 449.

446 Hajlīj fruit was eaten in Kawār (Nachtigal, Sahara und Sudan, I, 558). It was also eaten in Bornu (Rohlfs, Quer durch Afrika, II, 11; Nachtigal, ibid., 657). Chapelle (Nomades noirs, 192) refers to its being eaten by the Teda of Tibesti and the adjacent countries. For the collecting of hajlīj in Baele, see Nachtigal, Sahara und Sudan, II, 137. The fruit of this tree was also eaten in Wadai (see ibid., III, 184; Barth, Reisen, III, 334 (Cass, II, 508). In the Arabic spoken east of Lake Chad and in Wadai, hajlīj fruit is called tumer el-ᶜabīd "dates of the slaves" (see Carbou, Méthode, 213). In Bagirmi, hajlīj fruit was used to make a kind of bread called sirne — see Barth, Reisen, III, 343 (Cass, II, 515).

447 Fernandes, Description, 108-9. The stones of the fruit of Balanites aegyptiaca are used to produce oil; the procedure is described by Caillié for countries on the Senegal (Journal, I, 125-6; see also Colombani, "Le Guidimaka", 376). The Ahaggar Tuareg also collect the fruit of Balanites aegyptica, which they call taburak. Before consumption, they are macerated in water to remove the bitter taste (Nicolaisen, Ecology and culture, 177). See also Gast, Alimentation, 233-4.

448 For the dūm palm, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 190-1; Bois, Plantes, II, 593; Renaud, Colin, Tuḥfat al-aḥbāb, 186; Dalziel, The useful plants, 507-8.

449 Aboulféda, Géographie, Arabic text, 125; transl., II, part I, 174-5.

450 They were already eaten in ancient Egypt, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 190-1.

451 Barth, Reisen, II, 15 (Cass, I, 439), in Tessawa; II, 398 (Cass, II, 54) in Bornu; V, 298 (Cass, III, 535) at the town of Say on the Niger; V, 330 (Cass, III, 555), near the town of Sokoto; Nachtigal, Sahara und Sudan, I, 657 in Bornu; 267, in the Tebu-Reshade country; Rohlfs, Quer durch Afrika, I, 231-2, in the oasis of Jat, south of the Fezzan; Chapelle, Nomades noirs, 69, 191. Before eating, the hard fruit pulp of the dum palm is ground between the stones used to grind corn, see Briggs (Tribes of the Sahara, 241); he reports that the Tebu of Tibesti do this.

452 For the jujube tree and its fruit, see Bois, Plantes, II, 103, 106, 107; Renaud, Colin, Tuḥfat al-aḥbāb, 130-1; Hutchinson, Dalziel, Flora, 470-1; Dalziel, The useful plants, 299. Steentoft-Nielsen (Introduction, 84) mentions reddish edible fruits of the tree Ziziphus mauritiana. In the Fulani language, the tree is called diabi, in Wolof, sidem — see Adam, Végétation, 173. Carbou distinguishes "wild jujube" (Ziziphus lotus), sidr, sedera, sidrat in the Arabic dialect of the Lake Chad area from another species (Ziziphus spina Christi), nabag in the same dialect (cf. nabaq in literary Arabic). To the

west of Lake Chad, nabaq means the fruit of the sidr tree. In the Arabic dialect of the Chad area there also names, dal, nabag el-fil, and nabag karno for a variety of the tree bearing bitter fruit — see Carbou, Methode, 211.

453 Ibn Batoutah, Voyages, IV, 394. I do not think Mauny is right in thinking (Tableau, 228) that this refers to the meal of bourgou (byrgu) seed, Echinochlea stagnina, or of Nymphaea seed. Ibn Baṭṭūṭa's fruit should probably be identified as tomberong, recorded by Mungo Park, who encountered it in Kaarta, i.e. in the western part of the historic state of Mālī (cf. the name given to this tree in Mande language — tumborong, see Dalziel, The useful plants, 299). This is what Mungo Park says: "Tomberongs are small farinaceous berries, of a yellow colour and delicious taste, which I know to be the fruit of the Rhamnus lotus of Linnaeus. The Negroes showed us two large baskets full, which they collected in the course of the day. These berries are much esteemed by the natives, who convert them into a sort of bread, by exposing them for some days to the sun, and afterwards pounding them gently in a wooden mortar, until the farinaceous part of the berry is separated from the stone. This meal is then mixed with a little water and formed into cakes, which, when dried in the sun, resemble in the colour and flavour the sweetest gingerbread. The fruit is collected by spreading a cloth upon the ground, and beating the branches with a stick. The lotus is very common in all the Kingdoms which I visited; but is found in the greatest plenty on the sandy soil of Kaarta, Ludamar and the northern parts of Bambara, where it is one of the most common shrubs of the country. I had observed the same species in Gambia. As this shrub is found in Tunis, and also in the Negro kingdoms, and as it furnishes the natives of the latter with a food resembling bread, and also with a sweet liquor which is much relished by them, there can be little doubt of its being the lotus mentioned by Pliny as the food of the Lybian Lotophagi . . ." (Mungo Park, Travels, 99-100). There is a reference in Colombani ("Le Guidimaka", 377), to the drink made by the Moors and the Wolof of the Guidimaka area from jujube fruits fermented in water. We may add that the wild jujube also grows in Mauritania (see Nicolas, La langue berbère, 141). A kind of jujube is found in Ahaggar, where it bears the name tabakat. The local Tuareg collect the berries of this plant; they are crushed and mixed with millet flour (see Nicolaisen, Ecology and culture, 177). On tabakat (Ziziphus Saharae) and its use among the Ahaggar Tuareg, see also Gast, Alimentation, 231-2.

454 Roberty, "Plantes banales", 452.

455 Dozy, Suppl., II, 637.

456 Gamble, The Wolof, 28, 38.

457 See Barth, Reisen, II, 398 (Cass, II, 57); Nachtigal, Sahara und Sudan, I, 662. Rolls made of korna fruit, with a flavour similar to that of gingerbread, were eaten in

Bornu by Rohlfs (Quer durch Afrika, I, 297). Rohlfs adds that korna trees were planted in Bornu (ibid., II, 104). Caillie (Journal, II, 171) reports that in the early nineteenth century near the town of Jenne (i.e., not far from the area described by Ibn Baṭṭūṭa), rolls were made of lotus fruit (Rhamnus lotus = jujube), tasting like gingerbread, though somewhat sour. Probably this refers to the same cakes as are described in such detail by Mungo Park.

458 Nachtigal, Sahara und Sudan, I, 559 (on the way from Kawār to Bornu). Jujube fruits are also eaten in the Songhai country (Rouch, Les Songhay, 19). In the country between the town of Zinder and Agades, jujube fruit is eaten by the Fulani, who call it jabi (see Dupire, Peuls nomades, 62).

459 El-Bekri, Description de l'Afrique, Arabic text, 41; transl., 88. He uses the colloquial Arabic ᶜunnāb.

460 Al-ᶜOmarī, Masālik, 61-2. Leo Africanus also mentions the sycomore, which he calls giumeiz or "Egyptian figtree" (see Jean-Léon l'Africain, Description de l'Afrique, 577). For the meaning of the word jummayz, see Dozy, Suppl., I, 213.

461 For sycomore and its fruit, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 140-1; Bois, Plantes, II, 485-6.

462 Barth, Reisen, V, 217 (Cass, III, 480).

463 Nachtigal, Sahara und Sudan, I, 663. In the Arabic dialect spoken in the Lake Chad area, the name is djemméz, djimmézé, djimmézāya (see Carbou, Méthode, 212). According to Rohlfs (Quer durch Afrika, II, 113), in south-west Bornu, figtrees of great size grow, doubtless sycomore trees; their fruit is described as not so sweet and tasty as that of the European fig tree. It is possible that some of the information reported by European travellers in the eighteenth and nineteenth centuries relating to fig trees and figs in West Africa in fact relates to the sycomore. I may add that Adanson (Voyage to Senegal, 308-9) describes wild sycomore trees growing in the Senegal estuary.

464 Aboulféda, Géographie, Arabic text, 125; transl., II, part I, 174-5. Fig trees growing in what is now Mauritania are described also by Fernandes (Description, 108-9, and commentary, 163, note 210).

465 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300. The fig tree is also grown nowadays in the gardens of Ahaggar, and especially in the higher mountain areas as well as in the mountains of Aïr. The Tuareg eat the fruit of this tree either fresh or dried (Nicolaisen, Ecology and culture, 194, 203). It is possible that the cultivation of figtrees may have come to Audaghast from the Ibaḍīte oases of North Africa, including Wargla. Doreau, Considérations actuelles sur l'alimentation, 25.

466 Al-ᶜOmarī, Masālik, 44.

467 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 140; Bois,

Plantes, II, 469-70.

468 Gamble, The Wolof, 28.

469 Roberty, "Plantes banales", 444.

470 Barth, Reisen, V, 133 (Cass, III, 427).

471 Ibid., 355 (ibid., 372); Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 121.

472 Barth, Reisen, IV, 30 (Cass, III, 39). On fig trees in Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 181, 317; in Mandara, 110 and 128 (wild figs).

473 Nachtigal, Sahara und Sudan, I, 663. According to Rohlfs (Quer durch Afrika, II, 11), attempts at growing fig trees in Bornu were not successful.

474 Mauny, "Notes", 702. It may have taken place by way of the oasis of Waddān (Sokna) in Libya, where al-Idrīsī observed the cultivation of fig trees (cf. Edrîsî, Description de l'Afrique, Arabic text, 133; transl., 158), and the Fezzan, where in modern times fig trees have been among the most commonly cultivated fruit trees (see Rohlfs, Quer durch Afrika, 149). On the other hand it is not impossible that the cultivation of fig trees reached West Africa from Egypt by way of Tibesti, where figs are now among the important items in the daily food of the people (see Briggs, Tribes of the Sahara, 241). We may add that Ibn Sa^{c}īd mentions the importation of figs (presumably dried figs) from Sijilmāsa to Ghāna (Aboulféda, Géographie, translation, II, part I, 213, footnote 3). For the varieties of West African fig trees bearing edible fruit, see Dalziel, The useful plants, 276-83; Adam, "Végétation", 180.

475 Aboulféda, Géographie, Arabic text, 157-9; translation, II, part I, 223-4.

476 Al-^{c}Omarī, Masālik, 43, footnote 6.

477 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 93; Bois, Plantes, II, 349-50.

478 Bois, Plantes, II, 352. The possibility that the growing of pomegranate trees reached the Sudan through the Sahara from northern Africa seems to be confirmed by the fact that these trees are grown at the present time in some of the gardens in Ahaggar (Nicolaisen, Ecology and culture, 194). The Tuareg call the pomegranate terrumant, a name of Arabic origin (rummān), which points to the mediation of Arabs in the spread of the cultivation of this tree in the Sahara. It is possible that the people of the western Sudan learned the cultivation of pomegranate trees from Ibāḍite merchants. According to Doreau (Considérations actuelles sur l'alimentation, 26), pomegranates are now grown in Ibāḍite Mzab, which was populated mainly by emigrants from Wargla, and which remained in active commercial contact with the Sudan from the fourteenth to the sixteenth century.

479 Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 95, 96;

Bois, Plantes, II, 350.

480 El-Bekri, Description de l'Afrique, Arabic text, 41; translation, 88. We may add that pomegranate trees were grown in the Katsina area of Nigeria in the early nineteenth century (Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 121). In the second half of the century, pomegranate fruit was sold in the market of the capital of the state of Bauchi (see Rohlfs, Quer durch Afrika, II, 159).

481 Bois, Plantes, II, 181-3.

482 Aboulféda, Géographie, Arabic text, 158-9; transl., II, part 1, 223-4.

483 Al-ᶜOmarī, Masālik, 43, footnote 6.

484 Ibid., 44.

485 Nachtigal, Sahara und Sudan, II, 13.

486 Cobley, Botany of trop. crops, 260.

487 El-Bekri, Description de l'Afrique, Arabic text, 41; transl., 88.

488 Nachtigal, Sahara und Sudan, I, 128.

489 Jacut, Geogr. Wörterbuch, IV, 820.

490 Nachtigal, Sahara und Sudan, III, 329, 465.

491 Jean-Léon l'Africain, Description de l'Afrique, 476.

492 Barth, Reisen, IV, 173 (Cass, III, 127). There is a reference to very sour lemons in Kano and other part of Hausaland in Imam Umaru's account (see Mischlich, Kulturen im Mittel-Sudan, 25, 26). Lemon juice is also used medicinally. In the second half of the nineteenth century, lemons were also on sale in the market of the capital of the Bauchi country (see Rohlfs, Quer durch Afrika, II, 159). Dalziel (The useful plants, 306) refers to lemon trees in northern Nigeria; the fruit, bitter and unpleasant in taste, is used at Lagos as a treatment for rheumatism (ibid.). The lemon tree is also grown in southern Aïr (Nicolaisen, Ecology and culture, 203).

493 Ca da Mosto, Voyages, 97 (Voyages of Diego Gomes); Mauny, Tableau, 245.

494 Jean-Léon l'Africain, Description de l'Afrique, 476.

495 Bois, Plantes, II, 67-8. Probably the cultivation of this tree spread from Egypt to West Africa — witness, for example, its name in Fulani, lemu Misra, "Egyptian lemon" (see Dalziel, The useful plants, 306). A similar name, lemon Masar occurs in Hausaland (Mischlich, Kulturen im Mittel-Sudan, 26).

496 Renaud, Colin, Tuḥfat al-aḥbāb, 124-5.

497 Mauny, "Notes", 712-13.

498 El-Bekri, Description de l'Afrique, Arabic text, 49; transl., 104. The oases of North Sahara may have been

mediators in spreading lemon and orange cultivation into West Africa. We know, for instance, that lemons and oranges form part of the present-day daily food of the people of Mzab (see Doreau, Considérations actuelles sur l'alimentation, 25).

499 In the Kano area a sweet variety of orange has been cultivated in modern times (see Mischlich, Kulturen im Mittel-Sudan). For the growing of lemon and orange trees in West Africa during the period corresponding to our Middle Ages, see also Mauny, Tableau, 245; he cites Citrus aurantium L., sp. aurantifolia, as well as Citrus medica, and notes that the growing of lemon trees had reached the banks of the Gambia before 1456.

500 For the date palm and its culture in the Sahara, see Bois, Plantes, II, 570, 581; Gsell, Textes, 173-4; Dalziel, The useful plants, 509; Mauny, "Notes", 700-1; idem, Tableau, 236.

501 El-Bekri, Description de l'Afrique, Arabic text, 167; transl., 316; see also Aboulféda, Géographie, transl., II, part I, 216-27 (in Ibn Saʿīd).

502 Jean-Léon l'Africain, Description de l'Afrique, 421. Ca da Mosto also mentions dates in Wadan (Voyages, 16). There is reference in Fernandes (Description, 82-3) to the excellent dates which served as the most important element in the food of the people of the Baffor mountains (Mauritanian Adrar). According to Caillie (Journal, I, 148), Mauritanian Adrar produced dates in abundance, while the fields of the country were surrounded by numerous date palms.

503 Jacut, Geogr. Wörterbuch, I, 400.

504 Aboulféda, Géographie, Arabic text, 125; transl., II, part I, 174-5.

505 El-Bekri, Description de l'Afrique, Arabic text, 158, 168; transl., 299-300, 317.

506 Ed-Dimichqui, Cosmographie, 238; Manuel de la cosmographie, 338. Date palms grow nowadays in the valley of Tamurt en-Naʿaj, in the land of Tagant, near the former Audaghast — see Toupet, "Tamourt en Naaj", 98.

507 Ibn Batoutah, Voyages, IV, 387. The names for date palms in the Bambara language, tamare, and in that of the Mandingoes of the Gambia, tamate, both derived from the Arabic tamr, suggest that they were introduced to the old states of Ghāna and Mālī by the Arabs.

508 Jean-Leon l'Africain, Description de l'Afrique, 463.

509 Roberty, "Plantes banales", 452.

510 Barth, Reisen, V, 213, 217 (Cass, III, 480, 481).

511 Ibid., V, 329 (ibid, III, 555).

512 Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 34.

513 Ibid., Clapperton's journal, 59.

514 Al-ᶜOmarī, Masālik, 44.

515 Ed-Dimichqui, Cosmographie, 241; Manuel de la cosmographie, 342.

516 Barth, Reisen, V, 409 (Cass, III, 604).

517 Nachtigal, Sahara und Sudan, I, 623; see also Rohlfs, Quer durch Afrika, I, 346.

518 Edrîsî, Description de l'Afrique, Arabic text, 38, 39; transl., 45, 46.

519 Jacut, Geogr. Wörterbuch, IV, 230.

520 Barth, Reisen, I, 577 (Cass, I, 396).

521 Nachtigal, Sahara und Sudan, I, 543.

522 Aboulféda, Géographie, transl., II, part I, 218-19 (in Ibn Saᶜīd).

523 Marquart, Benin-Sammlung, LXXXV.

524 Chapelle, Nomades noirs, 122, 200 (a million date palms grow there). In the early nineteenth century, the southern limit of the culture of the date palm in the Lake Chad area lay four days' journey to the north of the town of Kuka (see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 318). In the central Sahara, some date palms can also be found in the gardens of Ahaggar and Aïr. Semi-wild date palms are found abundantly in Tassili-n-Ajjer, where the Tuareg tribes collect the fruit; see Nicolaisen, Ecology and culture, 184-6, 194, 203.

525 Al-ᶜOmarī, Masālik, 87.

526 Edrîsî, Description de l'Afrique, Arabic text, 4; transl., 5.

527 Jean-Léon l'Africain, Description de l'Afrique, 465.

528 Ibn Batoutah, Voyages, IV, 378.

529 Jean-Léon l'Africain, Description de l'Afrique, 38.

530 El-Bekri, Description de l'Afrique, Arabic text, 159; transl., 300.

531 For these two genera see Bois, Plantes, II, 109-11, 132; Hutchinson, Dalziel, Flora, 477-8. Wild wine grapes were discovered on the Gambia in the middle of the eighteenth century by Adanson (Voyage to Senegal, 168). Wild vines grew in profusion in the country of Bambuk on the upper Senegal, according to late eighteenth-century information by Golberry (Travels in Africa, I, 329). It must be remembered that real grapes are also grown in some of the gardens in Ahaggar (Nicolaisen, Ecology and culture, 194). In Mauritania, grapes of the genus Moenia are found; these are also called ᶜinab, like Vitis vinifera. See Nicolas, La langue berbère, 141.

532 Al-ᶜOmarī, Masālik, 44. In addition to this fruit, which is edible though sour, another species, Ampelocissus Grantii,

occurs in Senegal, Guinée and northern Nigeria. This is similar in appearance to the true vine and bears red or blackish grapes with a thin sweet pulp and large pips. These grapes can be used as a substitute for real grapes. Another species of this genus, A. Lecardii, which grows in Senegal, Dahomey and on the Jos plateau, produces fruit similar to grapes, good to eat, and which could well compete with real grapes. There are several other species which produce edible fruit. See Dalziel, The useful plants, 300-1.

533 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300.

534 Ibid., Arabic text, 148; transl., 283.

535 Renaud, Colin, Tuḥfat al-aḥbāb, 72. The culture of Vitis vinifera in the western Sudan may have come there from Nubia (where it is attested as early as the Middle Ages, see Jacut, Geogr. Wörterbuch, IV, 820), probably through the Lake Chad area which, as has been shown by Arkell ("The influence of Christian Nubia"), was in close contact with Nubia between A.D. 800 and 1200. Further west the route goes through the country of Katsina, where vine-growing continued up to the time the country was conquered by the Fulani in the early nineteenth century (for this, see Denham, Clapperton, Oudney, Discoveries, Clapperton's journal, 121). On the other hand, it is not impossible that the growing of Vitis vinifera may have come to Kānem from North Africa. The oases of the northern Sahara where it is grown, could have mediated this introduction. We know, for example, that Vitis vinifera is now cultivated in Mzab (see Doreau, Considérations actuelles sur l'alimentation, 9, 25).

536 In the Maghrib in the twelfth century, the riṭl was equivalent to 468.75 grams, see Hinz, Islamische Masse und Gewichte, 27-33.

537 Edrîsî, Description de l'Afrique, Arabic text, 32; transl., 38-9. White truffles are still eaten by Zenega from southern Mauritania; they call the plant terfās (see Nicolas, La langue berbère, 147). According to oral information from the Mauritanian scholar Shaikh Mukhtārun Ould Ḥāmidun who knows truffles (kamᶜa) from northern Mauritania, they are hard to digest and not very tasty. According to Nicolaisen (Ecology and culture, 175), the Ahaggar Tuareg collect and eat white truffles of the species Terfezia ovalispora; this is a fungus parasitic on the roots of Helianthemum Lippii L. The Tuareg eat them added to various dishes, e.g. couscous; see Gast, Alimentation, 241-2. There is also much information about the eating of terfās in the northern Sahara. According to Doreau (Considérations actuelles sur l'alimentation, 10) the people of Wargla stew and eat terfās (which he describes as parasites living on the plant known as reguig, i.e. Helianthemum). The Chaamba nomads from the neighbourhood of Wargla also gladly eat them boiled in water (ibid., 12-13). The people of el-Golea and of Touggourt also

appreciate them very much (ibid., 23). They are also eaten in Mzab (ibid., 26).

538 El-Bekri, Description de l'Afrique, Arabic text, 182; transl., 340.

539 Ibn Batoutah, Voyages, IV, 378.

540 Jean-Léon l'Africain, Description de l'Afrique, 576-7.

541 Ibid., 576, footnote 158. See also Renaud, Colin, Tuḥfat al-aḥbāb, 99; Dozy, Suppl., I, 145, under tarfās; Piault, La vie quotidienne de la femme Maouri, 29-30.

542 Jean-Léon l'Africain, Description de l'Afrique, 451.

543 On Alhagi maurorum, see Bois, Plantes, I, 92; Renaud, Colin, Tuḥfat al-aḥbāb, 87, 115-16.

544 Nachtigal, Sahara und Sudan, III, 538, see under Alhagi manniferum.

545 Jean-Léon l'Africain, Description de l'Afrique, 451, footnote 166.

546 Adanson, Voyage to Senegal, 68. Fernandes (Description, 108-9) mentions the consumption of the fresh resin of a variety of acacia, known as Arabian gum (?gum Arabic). For the eating of resin from acacia trees by the people of West Africa, see also Mauny, Tableau, 228; la Courbe, Premier voyage, 158; and particularly, Dalziel, The useful plants, 204, 206, 208 (acacia trees which grow in Hausaland, not far from Aïr). It is possible that the manna which Leo Africanus reports as being collected in Agades is the sweet secretion of Saccharum Ravennae, which grows wild in Ahaggar, where it is known to the local Tuareg under the name of tésenġelt. This secretion crystallizes into a sugar-like substance collected and eaten by the Tuareg (Nicolaisen, Ecology and culture, 175). Alternatively, it might be a reference to manna secreted by the tamarisk (Tamarix gallica), a plant which also grows in Ahaggar. This plant, called azawa in the Tuareg language, secretes a sweet juice consumed by the local Tuareg. Tamarix gallica is found also in small numbers in the mountains of Aïr (Nicolaisen, Ecology and culture, 133). Unfortunately I have no information as to whether Saccharum Ravennae also grows in Aïr. According to Gast, (Alimentation, 242-3) the manna used by the Kel Ahaggar which is called tâment, is the solidified gum of Tamarix aphylla (L.) and of Tamarix gallica. Another type of sweet manna is also yielded in Ahaggar by the grains ébestou or tébesteout (Imperata cylindrica, L.) and tesenġelt (Erianthus Ravennae, L.). For edible gums used by the Kel Ahaggar, see Gast, Alimentation, 242.

547 El-Bekri, Description de l'Afrique, Arabic text, 49; transl., 104.

3: MEAT AND FISH

1 This was the case, for example, with the Mandingoes, where meat was a luxury available only at festivals. Caillié, who studied the question of meat-eating in the course of his long journey through the areas occupied by them, records that in his time — the first decades of the nineteenth century — neighbours used to gather together for a common meal of young goat or lamb (Caillié, Journal, I, 345, 443, and II, 14). The Saharan peoples also do not eat meat often; this is true both of the Moors nomadizing in the western part of the desert (see ibid., I, 96) and with the Tebu of Tibesti (see Briggs, Tribes of the Sahara, 242), and also of the peoples of the Saharan oases, where meat is eaten once or twice a year (ibid., 238). It seems that it is only the Tuareg who eat considerable quantities of meat, both of domestic animals and of game; see ibid., 244 (referring to the Tuareg from Ahaggar), and Caillie, Journal, II, 325 (referring to Tuareg from the neighbourhood of Timbuctu).

2 Jean-Léon l'Africain, Description de l'Afrique, 54.

3 In the country of the Songhai, which is inhabited mostly by agriculturalists, extensive cattle-keeping is found only among pastoralists of non-local origin, the Fulani and the Tuareg. However, in every indigenous Songhai household, some domestic animals are kept, including cows, but mainly for milk, as meat is only occasionally eaten there. See Rouch, Les Songhay, 21. Similarly, in Hausaland, the great cattle-keepers are the Fulani, whereas the indigenous Hausa, though agriculturalists, also keep both cows and sheep and goats; nowadays, every household has them, though not in great numbers. Only a few Hausa have herds of cattle numbering 500 to 1000 head. See Mischlich, Kulturen im Mittel-Sudan, 29-33.

4 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 323.

5 Ed-Dimichqui, Cosmographie, 238; Manuel de la cosmographie, 338.

6 Al-ᶜOmarī, Masālik, 94.

7 Jean-Léon l'Africain, Description de l'Afrique, 464.

8 Ibid., 465. Leo Africanus adds that Melli (Mālī) had plenty of meat.

9 Al-ᶜOmarī, Masālik, 61.

10 Jean-Léon l'Africain, Description de l'Afrique, 471.

11 Jacut, Geogr. Wörterbuch, IV, 919.

12 Ibid., IV, 329; cf. Dammann, Beiträge, 57.

13 Jean-Léon l'Africain, Description de l'Afrique, 470.

14 El-Bekri, Description de l'Afrique, Arabic text, 181; transl., 339.

15 Fagnan, Maghreb, 55.

16 Ed-Dimichqui, Cosmographie, 239; Manuel de la cosmographie, 339.

17 Al-ᶜOmarī, Masālik, 94.

18 Ibn Batoutah, Voyages, IV, 440-1.

19 Jean-Léon l'Africain, Description de l'Afrique, 474.

20 Not being an expert on the subject, I am not going to discuss the different breeds of cattle kept in West Africa, now or in the past. Interested readers are referred to the work of Mauny, who not only reviews the information on cattle-keeping contained in various Arabic and European sources, but also deals with the history of the various breeds of West African cattle. See also Hill, "Animal breeding in Nigeria", 1-6. Another important study on cattle-keeping in West Africa is Dupire's Peuls nomades. I have also dealt briefly with the question of cattle-keeping by the early agricultural peoples of the western and central Sudan in my paper (Lewicki, "Animal husbandry"). Unfortunately I was only able to see Doutressoulle, L'élevage after this book was completed.

21 El-Bekri, Description de l'Afrique, Arabic text, 172-3; transl., 324-5.

22 Gamble, The Wolof, 100.

23 Leca, "Les pêcheurs de Guet N'Dar", 310.

24 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300.

25 On cattle-offerings by the Mandingoes, see Labouret, "Les Manding", 40. Subordinate to the state of Mālī was Bambuk, on the upper Senegal, inhabited by Mandingoes; in this country (the "land of gold dust" of the early Arabic geographers), Golberry, a European traveller at the end of the eighteenth century, reports seeing numerous herds of cattle kept there (Golberry, Travels in Africa, I, 331-2). Caillié, on his way from Jenne to Cabara (Kabara near Timbuctu) within the territory of the former state of Mālī, observed numerous herds of cattle (Journal, II, 252).

26 Al-ᶜOmarī, Masālik, 61, 70.

27 In the Niger bend, near Bandiagara and Hombori, in addition to the zebu, another variety of cattle is also kept, introduced from the south-east (see Desplagnes, Le plateau central nigérien, 351). Dwarf cattle, resistant to tsetse fly, are still kept by the Yoruba in southern Nigeria. though they are gradually giving place to cattle of the zebu breed imported from northern Nigeria. See Bascom, "Yoruba food", 42. For the keeping of short-horn cattle in West Africa, see Baumann, Thurnwald, Westermann, Völkerkunde, 323, 352.

28 Ibn Batoutah, Voyages, IV, 398.

29 On cattle cults in West Africa, see Hailey, African survey,

870-1. On ritual offerings by the Gouro people (Ivory Coast), see Meillassoux, Anthropologie économique des Gouro, 103.

30 Jean-Léon l'Africain, Description de l'Afrique, 465; these may have been Fulani, not Mandingo, herds.

31 There are, however, exceptions to this rule; for example, the Sonîke (Soninke) of Goumbou drink the milk of cows milked by Fulani herdsmen, and eat beef. For this information I am indebted to my learned friend M. Claude Meillassoux.

32 Labouret, "Les Manding," 40-1; Golberry, Travels in Africa, I, 333. It should be noted that according to Caillié (Journal, II, 65), the pagan Bambara, who belong to the Mande group, did not milk cows in the early nineteenth century.

33 Caillié, Journal, II, 269, 271.

34 On the question of the milking of cows by the peoples of western Africa, see Murdock, Africa, passim.

35 Jean-Léon l'Africain, Description de l'Afrique, 468. If Caillié is to be believed, a similar situation obtained in the early nineteenth century. Caillié says (Journal, II, 325) that the Tuareg in the neighbourhood of Timbuctu had large herds of cattle whose meat and milk served them as food. In the country of Massina to the south of Timbuctu, once occupied by the Bambara and later by the Fulani, there is mention in the seventeenth century of a herd of 6,000 cattle (see Mauny, Tableau, 279). There are repeated references to cattle-keeping and the eating of meat in the country of the Songhai in the seventeenth-century chronicle by ʿAbd ar-Raḥmān as-Saʿdī (Tarīkh as-Sūdān, 158, 298, 271). The Songhai still keep cattle at the present day (see Rouch, Les Songhay, 21).

36 Jean-Léon l'Africain, Description de l'Afrique, 472. It is possible that this refers to a breed of cattle known as duku (see Mischlich, Kulturen im Mittel-Sudan, 30). Rohlfs (Quer durch Afrika, II, 212) mentions the poor quality of bulls and cows in Hausaland.

37 Jean-Léon l'Africain, Description de l'Afrique, 476.

38 Leo Africanus (ibid., 474) also mentions that cows (possibly of the zebu breed) were kept by the people of the southern part of the kingdom of Agades (Aïr). See also Barth, Reisen, I, 57 (Cass, I, 399).

39 Mischlich, Kulturen im Mittel-Sudan, 29-30; Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 26 (Nupe).

40 Jean-Léon l'Africain, Description de l'Afrique, 480. The breeding of cattle in the country of the Zaghāwa (presumably to be identified with Kānem) in the tenth century is mentioned in al-Muhallabī (Jacut, Geogr. Wörterbuch, II, 932; Dammann, Beiträge, 54-5).

41 Barth, Reisen, IV, 33 (Cass, III, 37); Nachtigal, Sahara und Sudan, I, 577, 658. Rohlfs (Quer durch Afrika, I, 344), however, describes a butcher's shop where cattle was slaughtered and fresh meat sold and cooked, in the market place at Kuka, capital of Bornu.

42 It is possible that there may have been some former food taboo.

43 Al-ᶜOmarī, Masālik, 87.

44 Jean-Léon l'Africain, Description de l'Afrique, 482 and 483, footnote 117.

45 There is detailed information in Mauny (Tableau, 279-81) about the keeping of sheep and the different breeds found in West Africa, both now and in the past. See also Hailey, African survey, 873.

46 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 322.

47 Dozy, Suppl., I, 462.

48 Jean-Léon l'Africain, Description de l'Afrique, 560, 561.

49 Ibid., 420.

50 Ibid., 38.

51 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 323.

52 Leca, "Les pêcheurs de Guet N'Dar", 309.

53 El-Bekri, Description de l'Afrique, Arabic text, 172-3; transl., 324-5.

54 Ibid., Arabic text, 158; transl., 300.

55 Ibn Batoutah, Voyages, IV, 387. According to Ibn Baṭṭūṭa, lamb was a staple food in Walata.

56 Al-ᶜOmarī, Masālik, 63, 70; earlier (61), al-ᶜOmarī records that the sheep kept in Mālī were small. Dwarf sheep are still kept in some parts of West Africa, e.g. in Hausaland (see Rohlfs, Quer durch Afrika, II, 216), and by the Gagu people (Baumann, Thurnwald, Westermann, Völkerkunde, 317). For the keeping of small sheep by the sedentary peoples of the southern part of West Africa, see Mauny, Tableau, 280; see also Hill, "Animal breeding in Nigeria", 6.

57 For the keeping of sheep in the area between Jenne and Kabara, see, for example, Caillié (Journal, II, 252 and passim); Labouret, "Les Manding", 28; Baumann, Thurnwald, Westermann, Völkerkunde, passim. From written information from M. Claude Meillassoux (18.8.1966), we know that the Sonîke (Soninke) of Goumbou gladly eat mutton.

58 See Sidibé, "Les Foula du Birgo", 474, 496, 500.

59 Ibn Batoutah, Voyages, IV, 404, 407. It was explained to Ibn Baṭṭūṭa that the rams were there to avert the evil eye. This may also be an instance of the influence of Libyan culture (where rams were of prime importance) on

Mande customs.

60 Jean-Léon l'Africain, Description de l'Afrique, 471. Sheep are still kept in the Songhai country (Rouch, Les Songhay, 21). The people of the central Niger plateau (in the area of Bandiagara and Hombori) keep various types of fleeceless sheep, including the Saharan type, Ovis longipes, and eat the meat: (see Desplagnes, Le plateau central nigérien, 228, 351). The sheep of Ovis longipes type are kept in considerable numbers in southern Aïr, where the pastoral Tuareg sometimes have more sheep than goats. On the other hand, sheep-keeping is of relatively small importance among the northern Tuareg, i.e. the Ahaggar Tuareg and the Kel Ajjer: see Nicolaisen, Ecology and culture, 45-7; Gast, Alimentation, 129.

61 Barth, Reisen, IV, 349 (Cass, III, 237).

62 Jean-Léon l'Africain, Description de l'Afrique, 472, 476.

63 Barth, Reisen, V, 329 (Cass, III, 554). There is reference to the keeping of dwarf sheep in Hausaland in Rholfs, Quer durch Afrika, II, 216. For the fattening of sheep and the eating of them at festivals, see the account by Imam Umaru (Mischlich, Kulturen im Mittel-Sudan, 31-2); see also Gunn, Pagan peoples, 70 (the Katab people on the borders of Kano Province). The number of sheep in Nigeria is now estimated to be four million (Le Nigéria, 19).

64 Aboulféda, Géographie, Arabic text, 163; transl., II, part I, 222.

65 Jean-Léon l'Africain, Description de l'Afrique, 560. See also Mauny, Tableau, 280.

66 Barth, Reisen, II, 249, and III, 117 (Cass, I, 578, and II, 321); Nachtigal, Sahara und Sudan, I, 658 (fresh mutton). For the large flocks of sheep in Bornu in the early nineteenth century, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 319.

67 Al-ᶜOmarī, Masālik, 87.

68 Jean-Léon l'Africain, Description de l'Afrique, 482 and 483 footnote 117.

69 Jacut, Geogr. Wörterbuch, II, 932; Dammann, Beiträge, 54-5. For the keeping of sheep in these areas in modern times, see Nachtigal, Sahara und Sudan, I, 415 (Tibesti); II, 173 (Baele); III, 67, 187 (Wadai). See also Rohlfs, Quer durch Afrika, I, 250 (Kawār).

70 For the breeds of goat kept in West Africa and their origins, see Mauny, Tableau, 281. See also Hailey, African survey, 814.

71 Edrîsî, Description de l'Afrique, Arabic text, 3; transl., 3.

72 Barth, Reisen, V, 102 (Cass, III, 408). Caillié (Journal, II, 326) refers to the keeping of goats near Timbuctu in the early nineteenth century. The present-day Tuareg of Aïr and Ahaggar also keep a number of goats, together with

a smaller number of sheep (see Nicolaisen, Structures politiques, 3-4, 6; Gast, Alimentation, 126-7, 132, 133, 136). For the importance of goats in the husbandry of the now extinct Berber tribes nomadizing in the western Sahara, related to present-day Tuareg, see Mauny, Tableau, 281. The eating of goat meat at Ygild (Kediat Ijil in Mauritania) is referred to by Fernandes (Description, 76-7).

73 El-Bekri, Description de l'Afrique, Arabic text, 172-3; transl., 324-5.

74 Edrîsî, Description de l'Afrique, Arabic text, 3; transl., 3.

75 El-Bekri, Description de l'Afrique, Arabic text, 177; transl., 332. The Soninke (Soninke) from Goumbou, who live close to the historic locality of Irasnī, readily eat goat meat nowadays, according to written information from M. Claude Meillassoux.

76 Baumann, Thurnwald, Westermann, Völkerkunde, 317.

77 Al-ᶜOmarī, Masālik, 63, 70. Goats kept by the Saharan nomads are similarly easy to feed (Briggs, Tribes of the Sahara, 19).

78 Caillié, Journal, II, 252 (on the way from Jenne to Kabara); Labouret, "Les Manding", 28; Baumann, Thurnwald, Westermann, Völkerkunde, 323. Not all the Negro peoples of the western Sudan eat goat meat. According to information from M. Cissoko, the present-day population of Mali (or possibly only the Mandingo) believe that goat meat causes disease. I have myself noticed that some of the peoples of Senegal, particularly in the Casamance area, also believe certain diseases are caused by eating goats' meat.

79 The Songhai now keep goats (see Rouch, Les Songhay, 21). We know also that goats' meat is eaten by the people of the countries of Bandiagara and Hombori, where goat-keeping flourishes (see Desplagnes, Le plateau central nigérien, 222, 350).

80 Jean-Léon l'Africain, Description de l'Afrique, 474.

81 Barth, Reisen, I, 402 (Cass, I, 297). On the part played by goats' meat in the food of the Tuaregs from Aïr (where it is the principal meat eaten by the people) see Rognon, "Problèmes des Touaregs du Hoggar", 61. Nicolaisen (Ecology and culture, 33-45) writes fully on the considerable part played by goats in the husbandry of Aïr, Ahaggar and Tassili-n-Ajjer. Goats' meat forms the main part of the meat eaten by the Tuareg. The number of goats kept by the pastoral Tuareg is very considerable, and Lhote calculates that among the Kel Ahaggar there are 35-40 goats to every person. Among the agricultural groups settled in Ahaggar, the number of goats is somewhat lower, and Nicolaisen counts 15-20 goats per family. According to Gast, (Alimentation, 126) a nomadic family in Ahaggar can own 20-40 goats.

82 According to the account by Imam Umaru, goats were kept in almost every Hausa household, and they were frequently

killed for their meat. However, the Hausa did not rate goats' meat as high as mutton. See Mischlich, Kulturen im Mittel-Sudan, 33. According to Rohlfs (Quer durch Afrika, II, 212), dwarf goats were kept in Hausaland in the second half of the nineteenth century. For the eating of goats' meat in the Bauchi-Kano country, see Gunn, Pagan peoples, 70 (by people of the Katab group). Goats were also kept in Hausaland for their milk (see Hill, "Animal breeding in Nigeria", 6). The number of goats now kept in Nigeria is estimated as thirteen million. About six million goats and sheep are slaughtered for meat in the country every year. See Le Nigéria, 19.

83 Jean-Léon l'Africain, Description de l'Afrique, 480.

84 Barth, Reisen, II, 249 (Cass, I, 579); Nachtigal, Sahara und Sudan I, 658. At the beginning of the nineteenth century, there were huge herds of goats in Bornu.

85 Nachtigal, Sahara und Sudan, I, 268, 284 (Tibesti); II, 173 (Baele). The people of Kawār, part Tebu, part Kanuri, kept dwarf goats: see Rohlfs, Quer durch Afrika, I, 250. The Tebu, however, eat goats' meat only at festivals: see Briggs, Tribes of the Sahara, 242. It must be added that in certain cases in West Africa there is a taboo against the eating of goats' meat. See Thomas, "La conduite négro-africaine du repas", 619. See also note 78 above.

86 The introduction of camels in the Sahara and camel-keeping there is described by Mauny, who also gives much information from early Arabic and European sources (Tableau, 287-91).

87 Jean-Léon l'Africain, Description de l'Afrique, 38. The eating of camels' meat by the nomad tribes of southern Mauritania at the beginning of the sixteenth century is also described by Fernandes (Description, 100-1). At the beginning of the nineteenth century, the people of Walata had a very great number of camels (see Caillié, Journal, II, 380).

88 Ibn Batoutah, Voyages, IV, 378. The settled agricultural population of the southern borders of the Sahara was also quite fond of camels' meat. In the main, however, it seems that camels' meat was only eaten (as it still is) on festive occasions. On this subject see Briggs, Tribes of the Sahara, 18.

89 Ibn Ḥauḳal, Liber imaginis terrae, I, 100. The same author mentions enormous herds of camels owned by King Tinbarūtān (Tinyarūtān) (ibid., 101; see also Mauny, Tableau, 289).

90 Al-ᶜOmarī, Masālik, 94.

91 Edrîsî, Description de l'Afrique, Arabic text, 3, 9; transl., 3, 11.

92 In the second half of the eighteenth century, the Moors who lived on the Senegal river had large herds of camels and were reputed to feed mainly on camels' meat. See Lajaille, Voyage au Sénégal, 32.

93 Al-ᶜOmarī, Masālik, 67.

94 Ibn Batoutah, Voyages, IV, 429.

95 On the other hand, camels' meat was among the principal foodstuffs of the eastern neighbours of the Mandingoes, i.e. the Negro peoples of the Bandiagara and Hombori areas. See Desplagnes, Le plateau central nigérien, 228.

96 Jean-Léon l'Africain, Description de l'Afrique, 468.

97 Fernandes, Description, 84-5.

98 Al-ᶜOmarī, Masālik, 94. The herds of camels owned by the Berber Tuareg from Tadmekka and Takadda were presumably quite considerable in number. The Kel Ahaggar from an adjacent area now have camel herds estimated at 10,000-12,000 head. See Rognon, "Problèmes des Touaregs du Hoggar" 60. On the subject of the eating of camels' meat in the Saharan oases, we owe to Leo Africanus the information that it was eaten in the oasis of Guargala or Wargla (Description de l'Afrique, 439), and in the Fezzan (ibid., 447). The Tuareg of Aïr nowadays eat the meat of camels relatively seldom, while among the Ahaggar Tuareg and the Kel Ajjer, the meat of camels is much appreciated (see Nicolaisen, Ecology and culture, 54-65). But see Gast, Alimentation, 128.

99 Edrîsî, Description de l'Afrique, Arabic text, 34; transl., 41. We have more information about the keeping of camels by the Zaghāwa and adjacent tribes; on this subject see Edrîsî, Arabic text, 12, and transl., 15; Jacut, Geogr. Wörterbuch, II, 933 (quoted from al-Muhallabī); al-Maqrīzī (on the keeping of camels by the Ankala people near Kānem (see al-ᶜOmarī, Masālik, 87). For the keeping of camels in modern times by peoples once included in the Zaghāwa federation (the Tebu, Baele, etc.), see Nachtigal, Sahara und Sudan, I, 415, and II, 173. Camels were kept by the Tāju, a people adjacent to the Zaghāwa (Edrîsî, Description de l'Afrique, Arabic text, 40; transl., 47). This probably refers to the present-day Daju in southern Wadai. Camels were kept also by the people of Gaoga (the Bulala); see Jean-Léon l'Africain, Description de l'Afrique, 483.

100 Nachtigal, Sahara und Sudan, I, 268.

101 Ibid., I, 658. It should be pointed out that the Tebu kill their camels only when sick or unfit for work. See Briggs, Tribes of the Sahara, 242.

102 Al-ᶜOmarī, Masālik, 61.

103 Ibn Batoutah, Voyages, IV, 423-4. I do not have enough information about the eating of donkey-meat by the Mande people; from written information from M. Claude Meillassoux, it appears that the Sonîke (Soninke) from Goumbou, for instance, do not eat the flesh of donkeys. On the other hand my Mali informant, M. Cissoko from IFAN, states that the flesh of donkeys is eaten in some parts of the country — in the Sudanic savannah area.

104 Fernandes, Description, 76, 77. The Saharan nomads also

ate the flesh of wild donkeys (or donkeys gone wild), which they hunted; this meat was reputed to be very good. See Jean-Léon l'Africain, Description de l'Afrique, 40, 560; Mauny, Tableau, 283. Donkey meat is still eaten by the Negro people of the Hombori and Bandiagara area in the Niger bend, eastern neighbours of the Mandingoes. See Desplagnes, Le plateau central nigérien, 228 (for the keeping of donkeys in this area, see ibid., 350). The Tuareg, who are akin to the ancient Zenaga people of Mauritania, do not now eat donkey meat, but used to eat it (at least the Ahaggar Tuareg) in periods of hunger not very long ago. It is possible that the prejudice against eating donkey meat among the Tuareg has been caused by the increasingly strong establishment of Islam among them, which rejects donkey meat as unclean. See Nicolaisen, Ecology and culture, 107-8.

105 Gunn, Conant, Peoples of the middle Niger, 35.

106 Rohlfs, Quer durch Afrika, II, 256, quoting Lander.

107 El-Bekri, Description de l'Afrique, Arabic text, 176; transl., 329.

108 Jean-Léon l'Africain, Description de l'Afrique, 481.

109 Ibn Batoutah, Voyages, IV, 423.

110 Caillié, Journal, I, 443; II, 4, 79, 150. According to M. Cissoko, cynophagy exists among the Bambara up to the present day.

111 It must be emphasized that some groups among the animist peoples of West Africa do not eat dogs. Thus, for example, the women of the Lobi, Birifor and Teguessie abstain from cynophagy. We owe this information to Labouret (Les tribus du rameau Lobi, 108).

112 El-Bekri, Description de l'Afrique, Arabic text, 148; transl., 284.

113 Fagnan, Maghreb, 28.

114 Aboulféda, Géographie, Arabic text, 136-7; transl., II, part I, 189.

115 El-Bekri, Description de l'Afrique, Arabic text, 49; transl., 104. In Tunisia, dogs' flesh has been eaten from the earliest times. The Roman historian Justinus states that it was probably the Persian king Darius who prohibited the eating of dogs' flesh by the people of Carthage. It must, of course, have been the native peoples conquered by Carthage rather than the Carthaginians themselves who were involved. Possibly cynophagy is a part of a very ancient religious custom of the peoples of North Africa (possibly even pre-Berber), as it was also practised by the pre-Indo-European peoples of southern Europe. It was certainly from these ancient peoples that the Romans borrowed the custom of making offerings of dogs (canarium sacrificium); the meat of these animals was probably eaten by the priests after sacrifice, just as they ate the meat of other sacrificial animals. I owe this information, derived

from the works of Ateius Capito (died A.D. 27), to my learned friend Professor W. Strzelecki of Krakow. For the survival of this custom in North Africa, in addition to the information quoted in the text, I would like to quote also from an eighteenth-century English traveller, Thomas Shaw, who states, in the course of describing his travels in Berber countries (Travels, 134), that dog meat was eaten in Biskra, in present-day Algeria. The women of southern Algeria ate dog meat very readily because of the belief that it helped them to grow fat, an accomplishment much appreciated in the oriental world: (see La Malle, Province of Constantine, 96). According to some scholars, traces of cynophagy existed in Djerid in southern Tunisia even in the nineteenth century, though this is denied by Collinson in his "Etudes sur l'ethnographie", 198. For cynophagy among the peoples of the Maghrib, see also Canard, "La cynophagie", and Chalumeau, "Cynophagie".

116 Briggs, Tribes of the Sahara, 24-5, 239. In Berber circles, this custom goes back to remote antiquity (see Mauny, Tableau, 291). It must be emphasized that, by contrast with the Berbers of the oases of the Sahara, the pastoral Tuareg, so far as I am aware, do not eat dogs' flesh.

117 Bascom, "Yoruba food", 42. There is also information about the eating of dogs' flesh by Nigerian tribes such as the Achipawa (Atshefao, Kagora), and by the people of the Bussa emirate in Ilorin Province; these last eat dogs almost only at ritual feasts. See Gunn, Conant, Peoples of the middle Niger, 35-57; Gunn, Pagan peoples, 70. For the eating of dogs' flesh in the Gambia, see the account by Ca da Mosto (Voyages, 70; cf. Mauny, Tableau 202). The meat of dogs is also eaten by the people of the central Niger plateau (in the area of Bandiagara and Hombori), information which we owe to the important monograph by Desplagnes (Le plateau central nigérien, 228), though he makes no reference to any ritual or magical character of the custom. In a Dutch account of the kingdom of Benin dated 1600 we read that live dogs were sold in the Benin markets, their meat being popular with the local people (see Marquart, Benin-Sammlung, XV). We may add that dogs, with sheep, goats and chickens are among the oldest-known domestic animals in Africa. See Baumann, Thurnwald, Westermann, Völkerkunde, 323. Only after I had finished writing this book did I have the opportunity of reading Barbara Frank's interesting work Die Rolle des Hundes; in this book, the author writes at length (47-77) on the question of cynophagy in the societies of sub-Saharan Africa, and summarizes the information about cynophagy in some thirty places in North Africa (partly on the basis of a paper by Canard, "Cynophagie"). In relation to sub-Saharan Africa, the author attempts to distinguish cases where cynophagy is a matter of a favoured food, and those where it is a custom of ritual origin (in addition, among many West African peoples cynophagy has been practised for both gastronomic and ritual reasons). Doreau (Considerations actuelles sur l'alimentation, 11, 22, 25) also gives much

information about cynophagy in Wargla and in the Suf oasis and also in Mzab.

118 At the present day, there is a ritual taboo against the eating of poultry and eggs among some West African peoples. For example, the Tuareg and the Tebu forbid the eating of them except by children. See Briggs, Tribes of the Sahara, 243, 245. The situation was similar in Bornu, where chickens and eggs were eaten exclusively by women and children. See Nachtigal, Sahara und Sudan, I, 659. For the taboo against poultry and eggs, see also Thomas, "La conduite négro-africaine du repas", 619. On the other hand, the Bambara of Segu and Kaarta used chicken meat as a ritual food. See Monteil, Les Bambara, 169-70.

119 Ibn Batoutah, Voyages, IV, 394.

120 Al-ᶜOmarī, Masālik, 63, 70.

121 Ibn Batoutah, Voyages, IV, 435. For the keeping of poultry by the Songhai, see Rouch, Les Songhay, 21. The information given by nineteenth-century European travellers on the keeping and eating of chickens in West Africa is very abundant, and it is impossible to quote it all. It can be stated without exaggeration that chickens were kept in practically every Negro household. Chicken was eaten on a large scale; it is scarcely possible to discover how far there was a ritual taboo against chicken being eaten by adult men. It must be remembered, moreover, that chickens were among the earliest domestic animals in West Africa. On this subject, see Baumann, Thurnwald, Westermann, Völkerkunde, 323. It must be emphasized that, as a result of their taboo, the pastoral Ahaggar Tuareg eat neither fowls nor their eggs (see Nicolaisen, Ecology and culture, 162).

122 Al-ᶜOmarī, Masālik, 70. This information is repeated from al-ᶜOmarī by al-Qalqashandī (ibid., 63, footnote 1).

123 Lagercrantz, Contribution, 83 (also in Bathurst, kept by the Malinke); Rouch, Les Songhay, 21. For the hunting of wild geese in Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320. Ca da Mosto reports geese in Senegal in the fifteenth century (Voyages, 48).

124 Barth, Reisen, IV, 403 (Cass, III, 273); Lagercrantz, Contribution, 75. For the keeping and eating of ducks on the central Niger plateau, in the Niger bend, see Desplagnes, Le plateau central nigérien, 228, 350; they are called "canards de Barbarie", Barbary duck. (According to Morgan, Pugh, West Africa, 140, Barbary ducks are an introduction from Brazil.) On the hunting of wild duck in Bornu early in the nineteenth century, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.

125 Al-ᶜOmarī, Masālik, 70. The information is repeated from al-ᶜOmarī by al-Qalqashandī (ibid., 63, footnote 1).

126 Barth, Reisen, IV, 403 (Cass, III, 273) and V, 688 (Cass, III, 754) (pigeon known to Auelimmiden Tuareg); Lagercrantz (Contribution, 63) records that pigeons were kept at the

town of Jenne, i.e. within the territory of the old state of Mālī. They were also kept in Hausaland (Rohlfs, Quer durch Afrika, II, 212), in Bornu (Nachtigal, Sahara und Sudan, I, 669), and in the Saharan oases, where they are eaten boiled or in couscous (Briggs, Tribes of the Sahara, 239). For the keeping of pigeons in the area of Hombori and Bandiagara, see Desplagnes, Le plateau central nigérien, 350.

127 Aboulféda, Géographie, Arabic text, 163; transl., II, part I, 222. This information is repeated by ad-Dimashqī (Ed-Dimichqui, Cosmographie, 240; Manuel de la cosmographie, 342) who calls the bird "Abyssinian guinea-fowl". See also Mauny, Tableau, 292. On the hunting of wild guinea fowl in Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.

128 Barth, Reisen, V, 688 (Cass, III, 754); Rouch, Les Songhay, 21 (by the Songhai). To the south and south-east of Timbuctu, in the area of Hombori and Bandiagara, the people keep guinea fowl and eat them, as was observed by Desplagnes (Le plateau central nigérien, 228, 350). It was only after I had finished writing this book that I was able to examine the excellent work of Doutressoulle, L'élevage, which gives very full information about the rearing of cattle and poultry in ex-French West Africa, and in particular about the breeds of cattle kept there at the present day.

129 Ibn Batoutah, Voyages, IV, 429.

130 Ibid., IV, 424.

131 Al-ᶜOmarī, Masālik, 69.

132 The meat of dead donkeys was at one time served as a delicacy at the table of the king of Oyo in southern Nigeria (Rohlfs, Quer durch Afrika, II, 256, quoting Lander). In the 1860s canoemen on the upper Niger, recently converted to Islam, were taunted by a Moslem with "having eaten dead horse" in the past (Mage, Voyage, 206).

133 There is detailed information about the bows and arrows, spears and harpoons of the earlier peoples of West Africa in Mauny (Tableau, 233-4).

134 For the identification of baqar al-waḥsh as Antilope bubalis, see Dozy, Suppl., I, 102; Mauny, Tableau, 257 (but cf. ibid., 268); it is differently identified in Jean-Léon l'Africain, Description de l'Afrique, 40. It must be added that the information given by the early Arab writers about the various kinds of Bovidae, antelopes and gazelles is not always exact enough for identification. On this subject, see the pertinent comment by Mauny (Tableau, 268).

135 Ibn Batoutah, Voyages, IV, 383. Reference is also found in Leo Africanus (Description de l'Afrique, 559-60) to the excellent meat of the "wild ox" of the Sahara, almost certainly the addax. In another passage (40) Leo Africanus calls the addax gazelle el-meha, a name still in use in

Mauritania. The Zenaga of Mauritania know this antelope by the Arabic name el-waḥsh (Nicolas, La langue berbère, 149). "Wild oxen", identified by Monod as Addax nasomaculatus, are still fairly common in the southern part of the western Sahara. See Ibn Baṭṭūṭa, Extraits, 40, note 2.

136 Barth, Reisen, V, 533 (Cass, III, 708). Barth calls this antelope bakr el wahesh (i.e. baqar el-waḥsh, "wild oxen"). The Nemadi sell the dried meat of the addax and oryx antelopes they hunt, to the peoples of the south-Saharan oases. See Brosset, "Les Nemadi", 337-46.

137 Al-ᶜOmarī, Masālik, 63.

138 On antelopes in the Guidimaka country, see Colombani, "Le Guidimaka", 382.

139 For hunting Antilope bubalis (addax), according to al-ᶜOmarī, (Masālik, 63), the people used domesticated antelopes of the same species. It thus seems that attempts at taming this animal were made in Mālī, though they failed, as did attempts at taming the oryx by the ancient Egyptians. On the hunting of antelopes with poisoned arrows on the central Niger plateau (in the area of Bandiagara and Hombori), see Desplagnes, Le plateau central nigérien, 353.

140 Chapelle, Nomades noirs, 201. In Bornu, the people also formerly hunted antelopes for meat. See Nachtigal, Sahara und Sudan, I, 659.

141 El-Cazwini, Kosmographie, 17.

142 For medieval Portuguese references to oryx (in the Portuguese sources, ante, dant), see Mauny, Tableau, 256. Ca da Mosto refers to the use of danta shields in Senegal (Voyages, 33).

143 Ibn Saᶜīd in Aboulféda, Géographie, transl., II, part I, 216-17.

144 Aboulféda, Géographie, Arabic text, 136-7; translation, II, part I, 190. According to Fernandes (Description, 100-1), the meat of this antelope was considered better eating than that of any other game. On the great number of oryx ("an animal from which shields are made") in the Audaghast area, see El-Bekri, Description de l'Afrique, Arabic text, 171; translation, 321.

145 Jean-Léon l'Africain, Description de l'Afrique, 421 (see also ibid., 40: ellamth). For the identification of lamt as oryx, see Mauny, Tableau, 256. Maigret (Afrique équatoriale française, 69) believes that the Arabic name for oryx is begrat-el-wach (begrat el-waḥsh) and consequently identifies it with the "wild ox" we have just discussed. But this name means the addax, in the western Sahara especially (see Jean-Léon l'Africain, Description de l'Afrique, 40, footnote 314). The oryx (Aegoryx algazel algazel) is also found in Aïr, where the local Tuareg hunt it. The animal is called ézem in their language (see Nicolaisen, Ecology and culture, 164).

146 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 5.

147 Jean-Léon l'Africain, Description de l'Afrique, 40 and footnote 311. The "deer" hunted by the people of Tabelbelt (Tabelbala), who ate the meat (ibid., 432), was some kind antelope. The dama gazelle (Gazella dama permista) is found sporadically in the Ahaggar country and in larger numbers in Aïr. The local Tuareg call it enir (see Nicolaisen, Ecology and culture, 157, 164).

148 Edrîsî, Description de l'Afrique. Hares are found in the part of Mauritania near the Senegal, where the local Zenaga call them terumbal (Nicolas, La langue berbère, 148). The Negro agriculturalists in Ahaggar hunt small hares of the species Lepus harterti (émerwel, abekni in the Tuareg language). See Nicolaisen, Ecology and culture, 160. Hares are also eaten in the Sudanic savanna country in Mali at the present day (information from M. Cissoko).

149 Mauny, Tableau, 255. Hares were also hunted in Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.

150 El-Bekri, Description de l'Afrique, Arabic text, 182; transl., 340.

151 Edrîsî, Description de l'Afrique.

152 El-Cazwini, Kosmographie, 15-17; see also Dammann, Beiträge, 37, 44.

153 El-Bekri, Description de l'Afrique, Arabic text, 177; transl., 332. According to M. Cissoko, the meat of giraffe is eaten at the present time in the Sudanic savanna area of Mali.

154 Edrîsî, Description de l'Afrique, Arabic text, 7; transl., 8.

155 Ibn Khaldoun, Histoire des Berbères, II, 114.

156 Rouch, Les Songhay, 23; Colombani, "Le Guidimaka", 382.

157 Ibn Khaldoun, Histoire des Berbères, I, 346.

158 Nachtigal, Sahara und Sudan, I. 659. About giraffe-hunting near Lake Chad see also Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.

159 Barth, Reisen, III, 165-6 (Cass, II, 360).

160 This is stated by Leo Africanus of the inhabitants of Guaden (Wadan, Ouadane): Jean-Léon l'Africain, Description de l'Afrique, 421.

161 Ibid., 38, 40. The hunting of ostriches and the eating of ostrich meat in the early sixteenth century is also referred to by Fernandes (Description, 82-3, and 102-3). Fernandes adds that when it was impossible to make a fire, ostrich meat was pounded with the fat and eaten raw. Leo Africanus also mentions that ostrich was eaten in the oasis of Guargala, i.e. Wargla (Description de l'Afrique, 439), and at Tabelbelt (also known as Tabelbala, ibid.,

432); he also mentions the keeping of ostriches in Numidia, in the northern Sahara (ibid., 571). Ostrich meat was highly esteemed in Bornu (Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320). According to Nicolaisen, the ostrich was once very common in Ahaggar, where it has now been totally exterminated, though it is still very common in the more isolated regions of Aïr (see Nicolaisen, Ecology and culture, 175, 164). North African Arabs used to eat ostrich meat fried in the fat of the bird. This was called ḫammūm (see Daumas, La vie arabe, 389). Ostrich meat is eaten at the present day in the Sahel country in Mali. I owe this information to M. Cissoko.

162 Colombani, Le Guidimaka, 383. On the subject of ostriches in the Sahara in the period corresponding to the European Middle Ages, see Mauny, Tableau, 257-8; in addition to Arabic sources, Mauny has used information from European travellers in the fifteenth and sixteenth centuries.

163 El-Bekri, Description de l'Afrique, Arabic text, 172-3; transl., 324-5. Adanson (Voyage to Senegal, 138) reports that there were numerous herds of hippopotamus on the lower Senegal in the middle of the eighteenth century.

164 Mauny (Tableau, 450) correctly relates the word gafū (gafō) recorded by al-Bakrī with the word for hippopotamus, gabou (gabu) in the Tekarir (Tukolor) language, the Tekarir being the descendants of the former people of Takrūr. We may add, moreover, that the Arabic alphabet has no equivalent for the phoneme g, which is replaced in Arabic transcriptions of foreign words by q. In relation to the letter f in the second syllable, it must be remembered that in the form in which it is written in the middle of a word (particularly in Maghrib writing), it is very similar to the letter b (ـفـ = f: ـبـ = b).

165 Ibn Batoutah, Voyages, IV, 425-6. According to M. Cissoko, very fine specimens of hippopotamus are found in the Bafoulabe area of Mali. He also mentions a song current in the area praising the hippopotamus.

166 J. Rouch, "Chasse à l'hippopotame"; idem, Les Songhay, 21-2. The Songhai legend of the king of Gao called Farang describes this king's great hippopotamus hunt (see Desplagnes, Le plateau central nigérien, 399, 417-20, 439).

167 Nachtigal, Sahara und Sudan, I, 659. On the hunting of hippopotamus by the people of Bornu, and the eating of its meat, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320. As in Ibn Baṭṭūṭa's time, hippopotami can still be found near Kangaba as well as between Timbuctu and Gao (see Ibn Baṭṭūṭa, Extraits, 67, note 1).

168 Mauny, Tableau, 265 (but cf. ibid., 266).

169 Barth, Reisen, V, 687 (Cass, III, 754).

170 Mauny, Tableau, 265.

171 Desplagnes, Le plateau central nigérien, 399.

172 Al-ᶜOmarī, Masālik, 64. There is also reference to crocodiles in West Africa in Ibn Baṭṭūṭa (Ibn Batoutah, Voyages, IV, 396) and in Leo Africanus (Description de l'Afrique, 566-7).

173 Barth, Reisen, III, 288 (Cass, II, 473); Nachtigal, Sahara und Sudan, I, 659. In the countries on the Niger, crocodile-hunting is now done mostly by the Sorko clan of the Songhai (see Rouch, Les Songhay, 21) — their country in the fourteenth century formed part of the state of Mālī. We may add that great crocodile hunts are described in the legend of Farañg, king of Gao (see Desplagnes, Le plateau central nigérien, 399). In the middle of the eighteenth century, there were large numbers of crocodiles living on the Senegal, where the people hunted them and were quite fond of their meat (Adanson, Voyage to Senegal, 133, 267-9). M. Cissoko mentions hunting crocodiles in the Senegal and Niger rivers, as well as the eating of crocodile meat by the present-day people of Mali.

174 Nachtigal, Sahara und Sudan, I, 659-60. For crocodile-hunting and the eating of crocodile meat by the people of Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.

175 For these names for the monitor lizard, see Dozy, Suppl., II, 797 and 798, which also lists an extensive literature on the subject.

176 Jean-Léon l'Africain, Description de l'Afrique, 570.

177 Barth, Reisen, I, 606 (Cass, I, 413). Waran meat is willingly eaten by the people of Wargla (see Doreau, Considérations actuelles sur l'alimentation, 10). By contrast with the Arabs, the Aïr and Ahaggar Tuareg do not eat the meat of waran which they abhor, though it is considered delicious by many Europeans. This is probably a case of ancient Tuareg food taboos, which related also to reptiles. The meat is eaten only by slaves and by some agriculturalists living in these areas (see Nicolaisen, Ecology and culture, 162, 167). But see Gast, Alimentation, 250.

178 Jean-Léon l'Africain, Description de l'Afrique, 569. The meat of this lizard is not eaten by the Tuareg, with the exception of slaves, agriculturalists and certain Ahaggar vassal tribes, and also with the exception of the Aïr Kel Ewey group (see Nicolaisen, Ecology and culture, 162 and 167). As with waran, this is a case of a food taboo against reptiles; but see Gast, Alimentation, 249-50.

179 Desplagnes, Le plateau central nigerien, 228. Nachtigal (Sahara und Sudan, III, 150), mentions that lizard (dabb, i.e. the dabb species) was eaten to the south of Wadai. Dabb is willingly eaten by the people of Wargla, and also the Mzab who ascribe to it various medicinal properties (see Doreau, Considérations actuelles sur l'alimentation, 10-26 and 63).

180 Jean-Léon l'Africain, Description de l'Afrique, 554.

Elephants in the western Sudan are also mentioned by al-Qazwīnī (Kosmographie, 15; see also Dammann, Beiträge, 37); al-Bakrī, who mentions them when describing the country of Gharantal (El-Bekri, Description de l'Afrique, Arabic text, 177; transl., 332); al-Idrīsī, who speaks of elephants on the Senegal (Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 5); al-ʿOmarī, Masālik, 63-4); and Ibn Baṭṭūṭa (Voyages, IV, 425).

181 An interesting account of elephant-hunting at the end of the eighteenth century is given by Mungo Park, who reports that the animal was skinned, and thin slices of the best parts of the meat were cut off and dried in the sun to preserve them (see Travels, 309-10). For the eating of elephant meat by the people of the Bandiagara and Hombori area of the Niger Bend, see Desplagnes, Le plateau central nigérien, 228. Ca da Mosto describes the hunting of elephants on the Gambia; he was given some of the meat (which he ate, but found tough and insipid); some he salted and took home as a gift for Henry the Navigator; the remainder was given to the hunters for food, as was evidently the custom (Voyages, 70-2). The king of Dahomey in the eighteenth century had an elephant killed every year to feast the Mallay (Moslem, ?Mali) traders at his court at the end of Ramadan (Norris, Memoirs, 103).

182 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 323. According to Mauny (Tableau, 260, footnote 3), this relates to the species Dermochelys coriaces, which reaches 2 m 40 in length.

183 Aboulféda, Géographie, transl., II, part I, 212-13. Mauny (Tableau, 260) localizes "Turtle Island" between Cape Blanco and Cape Timiris, on the Mauritanian coast. In all probability, the people of Ayūnī and Aulīl are the same as the scorned fishing caste of the Berber Zenaga (in Portuguese sources the Azenegues), who ate turtle (see Fernandes, Description, 52-3), and who inhabited the whole coast of southern Mauritania to the estuary of the Senegal. These were the ancestors of the scorned fishing tribe of the Imraguen who occupy the same area at the present day, and who are fond of the meat of sea-turtles, noted for their great size (reaching over six feet in length). See Revol, "Les fractions d'Imraguen", 212-13. See also Jean-Léon l'Africain, Description de l'Afrique, 565-6. This author mentions the medicinal properties of the meat of the Saharan turtle.

184 El-Bekri, Description de l'Afrique, Arabic text, 180; transl., 337. There is reference to the hunting of river turtles of the Niger in the legend of Farāng, king of Gao. See Desplagnes, Le plateau central nigérien, 399, 439.

185 Barth, Reisen, III, 67 (Cass, II, 281). It must be emphasized, however, that the Aïr Tuareg consider turtle meat edible (see Nicolaisen, Ecology and culture, 167). Turtle is also eaten by the Yoruba (Bascom, "Yoruba food", 42, footnote 3).

186 On the various snakes found in the Sahara and the Sudan, see Mauny, Tableau, 259.

187 Al-ᶜOmarī, Masālik, 82-3. The eating of snakes by the people of the south Mauritanian provinces of Lodea and Brebisch is mentioned in the early sixteenth century by Fernandes (Description, 98-9). The peoples of the lower Senegal still ate snakes in the eighteenth century (see Adanson, Voyage to Senegal, 130). The Mandingoes of the country of Galam in the upper Senegal basin also ate snakes in the late eighteenth century (see Mungo Park, Travels, 76). Early in the nineteenth century, snakes were eaten by the Bambara (see Caillié, Journal, II, 4). Further east, snakes were consumed by the people of the Hombori and Bandiagara area (see Desplagnes, Le plateau central nigérien, 228-9). There is also a reference in Ibn Saᶜīd to the people of the western Sahara eating snakes (al-ᶜOmarī, Masālik, 83). I may add that even poisonous snakes, after their venom bags have been removed, are eaten to this day by the Negro people of the Cayor area of Senegal. I owe this information to a Wolof scholar, M. Amar Samb from IFAN, who himself used to eat roasted snakes in his childhood. According to another of my informants, M. Cissoko, snakes are also eaten in the Mali savannah. On the eating of vipers in Ahaggar, see Gast, Alimentation, 250.

188 Edrîsî, Description de l'Afrique, Arabic text, 31; transl., 37.

189 Ibn Batoutah, Voyages, IV, 383.

190 Edrîsî, Description de l'Afrique, Arabic text, 34; transl., 40. Large snakes of the species Python sebae are also eaten by the Tuareg (see Mauny, Tableau, 259).

191 Edrîsî, Description de l'Afrique, Arabic text, 35; transl., 41. The Tebu of Tibesti are probably descendants of the troglodyte Ethiopians who in the fifth century B.C. were repeatedly raided by the Berber Garamantes of the Fezzan. These Ethiopians ate snake. See Gsell, Textes, 22, 23 and commentary, 177.

192 Aboulféda, Géographie, transl., II, part I, 212.

193 Revol, "Les fractions d'Imraguen", 210-13.

194 Gamble, The Wolof, 38, 100-1.

195 Edrîsî, Description de l'Afrique, Arabic text, 3; transl., 3.

196 Ibid., Arabic text, 5; transl., 5-6. Mauny (Tableau, 271) thinks this refers to Clarias sp.

197 Edrîsî, Description de l'Afrique, Arabic text, 6; transl., 6-7.

198 Jean-Léon l'Africain, Description de l'Afrique, 465.

199 Ibid.; 470. In the late eighteenth and early nineteenth centuries, fish was an important foodstuff in the Mandingo country, as attested by Mungo Park (Travels, 51, 117,

208-11) and Caillié (Journal, I, 349).

200 Edrîsî, Description de l'Afrique, Arabic text, 8; transl., 10. The Maddāsa tribe was of Berber origin; probably the Tuareg living near the Middle Niger are, in part at least, their descendants. Early in the nineteenth century, these Tuareg ate a couscous made of Nymphaea seed cooked with fish (see Caillié, Journal, II, 325-6). On the other hand, fish is taboo to the Tuaregs of Ahaggar (see Briggs, Tribes of the Sahara, 245). According to Nicolaisen (Ecology and culture, 162, 164), the noble Tuareg never eat fish, but fishing is practised nevertheless in certain areas of central Ahaggar and in Tassili-n-Ajjer, where, for instance, Clarias is fished.

201 Ibn Batoutah, Voyages, IV, 435. Among the Songhai, fishing is traditional for men of the Korongoy clan, who catch fish in nets in the lake region, sharing the fishing areas with the Bozo and the Somono. See Rouch, Les Songhay, 22. The Songhai legend of Farañ king of Gao describes him fishing large silurus fish (see Desplagnes, Le plateau central nigérien, 399).

202 Edrîsî, Description de l'Afrique, Arabic text, 40; transl., 47. According to Mauny (Tableau, 263), the būrī of al-Idrīsī is probably Clarias lazera.

203 Nachtigal, Sahara und Sudan, I, 660.

204 Aboulféda, Géographie, transl., II, part I, 218.

205 Ed-Dimichqui, Cosmographie, 241; Manuel de la cosmographie, 342.

206 For fishing villages on Lake Chad, see, for example, Barth, Reisen, III, 35 (Cass, II, 255). Some of the southern Tebu are very fond of dried fish imported from the Sudan. See Briggs, Tribes of the Sahara, 243. For the eating of fish by the neighbouring Zaghāwa, see Edrîsî, Description de l'Afrique, Arabic text, 12; transl., 15.

207 Edrîsî, Description de l'Afrique, Arabic text, 6; transl., 6-7.

208 Aboulféda, Géographie, transl., II, part I, 215-16. The drying of meat (beef in this case) by the Brakna Moors — i.e. in territory occupied in medieval times by the Juddala Berbers and adjacent tribes, is described early in the nineteenth century by Caillié (Journal, I, 131). According to Caillié, the meat, cut into narrow strips, was hung on wooden sticks supported by four poles. The drying was watched by a slave who kept up a moderate fire below the meat, night and day. When dry, the meat was packed into leather bags. Prepared in this way, it would keep for a long time without going bad. Caillié adds that the Moors commonly ate this meat without cooking or other preparation of any sort. Another description of the drying of meat by the Mauritanian nomads on the banks of the Senegal is given in Description de la Nigritie by MPDP (Pruneau de Pommegorge, 19-20). Before drying in the sun, according to this author, the meat was immersed, once only, in salt

water. This meat was ground to powder before cooking, or a soup was prepared from it, eaten with boiled millet-flour. The hunting tribe of the Nemadi also preserve their game by drying. It is eaten pounded to powder, as an addition to couscous (see Briggs, Tribes of the Sahara, 112, 239). To this day the people of Mauritania willingly eat meat dried in the sun in the form of narrow strips which are there known as tishtār (tishṭār). I owe this information to Shaykh Mukhtārun Ḥāmidun of Nouakchott, a well-known Mauritanian scholar. The caravan which went from Timbuctu to Morocco in 1934, according to the French traveller Odette du Puigaudeau, took with it "tichtar of beef, of camel or of antelope in the form of thongs of smoked meat, dry, brown, woody like bundles of bark . . ." (Le sel du desert, 72; see also Alioun Sal in Ancelle, Explorations, 208, on tichtar). The drying or smoking of meat in the Hombori and Bandiagara area is described by Desplagnes (Le plateau central nigérien, 359-60). This includes the meat of hippopotamus and sea cow, among other kinds.

209 Ibn Batoutah, Voyages, IV, 444. Here is a description of the drying of meat among the contemporary Ahaggar and Aïr Tuareg, from Nicolaisen's Ecology and culture, 233: "Like other North African peoples, the Tuareg dry meat of domestic animals and of game. The people of Ayr know three distinct drying methods, namely (1) iwesan, that is meat which is boiled until it is free of blood; it is dried in the shade; (2) tikelsin, uncooked meat cut into pieces to be dried on a string in the shade; (3) kules, uncooked meat cut into strips which are dried for some time to be treated with salt and various spices. This last method is not practised among the Tuareg of Ayr, but by sedentary people of Agadez and by Negroes further south in Damergu. The Ahaggar Tuareg generally boil or roast the meat before drying; meat roasted in the ashes and thereupon dried is known as takasa. I do not know whether the Ahaggar Tuareg also practise the method of drying raw meat like the Ayr Tuareg, but the dried agezzeram lizards which they take to Tidikelt on trading expeditions are dried uncooked. Furthermore, the method of drying raw meat is known elsewhere in the Northern Sahara, and I have myself seen it practised among the Berber-speaking Chawiya of Aures." For the preservation of meat in Ahaggar, see also Gast, Alimentation, 137.

210 Edrîsî, Description de l'Afrique, Arabic text, 12, 34, 37; transl., 15, 40, 44. The Bulgeda (Bulguda), who are related to the Tebu, preserved antelope meat by drying it. See Rohlfs, Quer durch Afrika, I, 248. In the Arabic dialect of the Chad basin, dried meat is called leḥām yābes (see Carbou, Méthode, 201), whereas the Auelimmiden Tuareg call the same thing issan iekor (Barth, Reisen, V, 703; Cass, III, 759).

211 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 5.

212 Ibid., Arabic text, 40; transl., 47.

213 Aboulféda, Géographie, transl., II, part I, 218.

214 Gamble, The Wolof, 38, 100-1. Professor Régine Nguyen Van-Chi-Bonnardel is studying sea fishing in Senegal; in May 1967 she arranged for me to visit Kayar, a typical Senegal village of fishermen south of Dakar, where fish-drying is practised on a large scale. From my own observations and from the explanation given by Mme Van-Chi, I can state that the fishermen of Kayar store the smaller unsold fish in large bucket-like containers. After a short time they pour sea water over them and leave them for several days to ferment. Next they are cut in two, cleaned and dried in the sun on wooden platforms covered with mats. They are dried for several days, after which they are ready for consumption, cooked or raw, or for sale. See Nguyen Van-Chi-Bonnardel, L'économie maritime, 175-83. According to Caillié (Journal, I, 349), the Dialonke dried fish "in smoke". Here is what Mungo Park says about the preservation of small fish by the peoples of the banks of the Faleme river: "The small fish were taken in great numbers in handnets. . .the fish last mentioned are prepared for sale in different ways; the most common is by pounding them entire as they come from the stream in a wooden mortar, and exposing them to dry in the sun, in large lumps like sugar loaves. It may be supposed that the smell is not very agreeable; but in the Moorish countries to the north of Senegal, where fish is scarcely known, this preparation is esteemed as a luxury, and sold to considerable advantage. The manner of using it by the natives is by dissolving a piece of this black loaf in boiling water, and mixing it with their Kouskous" (Mungo Park, Travels, 51). A similar method is reported by Barth in Wadai. According to him, dried and ground fish formed into a loaf was dissolved into a kind of pap which was eaten (Reisen, III, 525; Cass, II, 661). A description of the drying of sea fish by the Imraguen tribe in Mauritania is included in Revol, "Les fractions d'Imraguen", 216. They also do not use salt to preserve fish. Dried river fish were paid as tribute to the kings of Songhai by the enslaved population (the Zinjī) of the country of the historic Mālī (see Tarikh el-Fettach, Arabic text, 57; French translation 110).

215 Barth, Reisen, II, 391 (Cass, II, 52).

216 Nachtigal, Sahara und Sudan, I, 658; see also Rohlfs, Quer durch Afrika, II, 31. The Hausa smoke fish (see Mischlich, Kulturen im Mittel-Sudan, 39), while the people of the Bauchi country preserve fish caught on the Niger by drying (Rohlfs, Quer durch Afrika, II, 158). For the export of dried fish from Nupe, see Forde, Armstrong, Brown, Peoples of the Niger-Benue confluence, 27.

217 El-Bekri, Description de l'Afrique, Arabic text, 170; transl., 320-1. This food was seen among the Brakna Moors in southern Mauritania by Caillié, who reports (Journal, I, 96) seeing the "queen" of this tribe eating "meat dipped in melted butter". The present-day Tuareg, akin to

the ancient Berber peoples of Mauritania, know a similar dish, which consists of meat (possibly fresh meat) which is pounded in a big mortar after boiling, and often served with liquid butter poured over it. This dish is also known to the Aïr Tuareg (see Nicolaisen, Ecology and culture, 233). Meat prepared in this way is called talebeẓẓat by the Kel Ahaggar (Gast, Alimentation, 135). The Tuareg, akin to the ancient Mauritanian Berbers, most often cook meat in clay or metal pots. Nicolaisen (ibid., 232) assumes that this method of preparation has been in use for centuries among the Tuareg, but that the roasting of small animals (goats, sheep) or parts of them in the hot ashes of the fire was the traditional method. This method is still known today and is called abatul. On abatul see also Gast, Alimentation, 132.

218 Nachtigal, Sahara und Sudan, I, 268.

219 Ibid., I, 657. Meat prepared in this way may sometimes be injurious to health.

220 Jean-Léon l'Africain, Description de l'Afrique, 35-6.

221 Ibid., 38. According to Fernandes (Description, 98-9, 100-1), who describes this country some years before Leo's journey, meat was roasted in the ground in a deep ditch (pit) where fire had been kindled and covered with sand which had also been heated. According to another passage in Fernandes (Description, 82-3), the sedentary population of the Baffor Mountains (Mauritanian Adrar) baked meat in an oven.

222 Edrîsî, Description de l'Afrique, Arabic text, 31; transl., 37-8. See also Dozy, Suppl., I, 808, and Wahrmund, Handwörterbuch, I, 1,025 (see under shīḥ).

223 Ibn Batoutah, Voyages, IV, 442-3. The people of the Bandiagara and Hombori area either roast their meat or stew it in couscous. See Desplagnes, Le plateau central nigérien, 229. Among the Aïr Tuareg, descendants of the ancient inhabitants of Takadda, as well as among the northern Tuareg, the method of spit-roasting is still known at the present day. Meat roasted in this way is known by the Arabic name meshwi, which might confirm the suggestion by Nicolaisen (Ecology and culture, 232) that the Tuareg borrowed this method from the North-African Arabs. It must be emphasized, however, that the Takadda Tuareg, for example, already knew it in the middle of the fourteenth century — at a period when Arab influence on the culture of the peoples of the Sahara and the Sudan was much less than it became several centuries later. Could it be that the name meshwi replaced some more ancient Tuareg name for this kind of roasting?

224 Ibn Batoutah, Voyages, IV, 401. Beef is still fried in animal or vegetable fat in West Africa — in this particular case in the Saharan oases (see Briggs, Tribes of the Sahara, 238).

225 Edrîsî, Description de l'Afrique, Arabic text, 31; transl. 37-8.

226 Edrîsî, Description de l'Afrique, Arabic text, 34; transl., 40.

227 Jean-Leon l'Africain, Description de l'Afrique, 470.

228 Cf. the miyáa sauce prepared by the Maouri (Piault, La vie quotidienne de la femme Maouri, 29-30).

229 Nachtigal, Sahara und Sudan, I, 658, 660. The Imraguen of the Mauritanian coast eat their fish roasted (in a hole dug in the sand), boiled (preferably with rice), and also dried, as an addition to couscous. See Revol, "Les fractions d'Imraguen", 217.

230 Barth, Reisen, II, 398 (Cass, II, 57).

231 Nachtigal, Sahara und Sudan, I, 658, and II, 533.

4: OTHER FOODSTUFFS

1 Dalziel, The useful plants, 350-4; Cobley, Botany of trop. crops, 128-9; Murdock, Africa, 70; Baker, "Comments", 3; Steentoft-Nielsen, Introduction, 141-2; according to Dalziel (The useful plants, 351), shea butter kernels contain 45-55% oil. Unfortunately I have not been able to obtain the paper by P. Worms, "Le karité", 64-5, which is devoted to this question.

2 According to Dalziel (The useful plants, 350) the name karité is derived from the language of the Wolof of Senegal. This opinion is not shared by Mauny (Tableau, 449), who derives the word from the Sarakole language, which was spoken by the people of the historic state of Ghāna. According to Mauny, in this language, khari-te means khari-oil (khari = Butyrospermum parkii).

3 Al-ᶜOmarī, Masālik, 62-3.

4 Ibn Batoutah, Voyages, IV, 392-3.

5 According to Caillié (Journal, II, 54-5), the pulp of the shea butter fruit surrounding the kernel is greenish in colour and mealy, very pleasant to the taste; the local people were very fond of it. Similarly, Nachtigal (Sahara und Sudan, I, 580-1), who follows the example of al-ᶜOmarī in comparing the fruit to a small lemon, reports that the pulp layer surrounding the kernel was very good to taste.

6 Ibn Batoutah, Voyages, IV, 398.

7 Ibid., IV, 400-1.

8 Mungo Park, Travels, 26.

9 Ibid., 202-3. We also have interesting descriptions of the production of shea butter in Bamako and among the peoples of the Lobi group; the first we owe to Dubois (Tombouctou la mystérieuse, 73-4), the second to Labouret (Les tribus du rameau Lobi, 110 and 114-15).

10 Caillié, Journal, II, 55-6.

11 Dalziel, The useful plants, 352.

12 Mischlich, Kulturen im Mittel-Sudan, 24.

13 Caillié, Journal, II, 56.

14 Dalziel, The useful plants, 353.

15 Mauny, "Notes", 705.

16 Mungo Park, Travels, 26 and 202-3.

17 Barth, Reisen, V, 31 (Cass, III, 365).

18 Ibid., II, 521 (Cass, II, 143).

19 Monteil, "La langue des Bozo", 331.

20 See Sidibé, "Les Foula du Birgo", 468, 470-4. Shea butter is eaten also by the people of the Hombori and Bandiagara region in the Niger bend: see Desplagnes, Le plateau central nigérien, 229.

21 Ed-Dimichqui, Cosmographie, 240; Manuel de la cosmographie, 341.

22 El-Bekri, Description de l'Afrique, Arabic text, 162; transl., 307.

23 Edrîsî, Description de l'Afrique, Arabic text, 65; transl., 75.

24 Fagnan, Maghreb, 19-20.

25 Ibn Khaldoun, Histoire des Berbères, II, 274-5. Roux (La vie berbère, 34) gives an interesting description of the cultivation of the argan tree in south-western Morocco, and also a description of the production of oil from its fruit.

26 The word zinkān used by ad-Dimashqī for the tree with oil-bearing fruit may also be pronounced zingān, as the letter k may imply the phoneme g which is absent in the Arabic alphabet. Should not this word be connected with the names for Elaeis guineensis and its fruit in the languages of West Africa — tin (Bambara) teng (Wolof), tengo (Mandingo) and zukunnu (Nupe)? The final element -an in the word zingān may be the Berber masculine plural suffix. As to zing-, this may correspond to the teng of the Wolof, or to the tengo of the Mandingoes.

27 For Elaeis guineensis, see Dalziel, The useful plants, 499-507; Cobley, Botany of trop. crops, 122, 127. See also Mauny (Tableau, 248), who believes that the oil which Ca da Mosto describes as having "the scent of violets, the taste of our olive oil, and a colour which tinges the food like saffron, but is more attractive" must be palm oil. G. R. Crone, editing the English edition, makes the impossible suggestion that this is ground-nut oil (Ca da Mosto, Voyages, 43-4).

28 Barth, Reisen, V, 316 (Cass, III, 546).

29 Leca, "Les pêcheurs de Guet N'Dar", 309-13. It is possible

that the vegetable oil called taman-toulou (taman-tulu) produced by the Mandingoes of Timé (in the present-day Republic of Guinée) from the tree called taman, as described by Caillié (Journal, II, 56), is the oil of the palm Elaeis guineensis. On the other hand, Dalziel, who lists the indigenous West African plant names, does not include the name taman (The useful plants, 555-8). Tulu means "oil" in the Mandingo language (see Dalziel, ibid., 447). Elaeis guineensis is also known to the Berber Zenaga in southern Mauritania, where it is called ktir: (see Broussais, "Recherches", 394).

30 For sesame, a plant presumably of tropical African origin, see Dalziel, The useful plants, 447. See also Hailey, African survey, 860-1.

31 Kubbel, Matveev, Arabskiye istochniki, II, 216, 221. See also Mauny, "Notes", 718. Among the numerous names for sesame listed by Dalziel, the Songhai name is omitted.

32 Barth, Reisen, III, 299 (Cass, II, 480).

33 Nachtigal, Sahara und Sudan, I, 664, and II, 390.

34 Barth, Reisen, III, 398 (Cass, II, 558). Nachtigal, Sahara und Sudan, II, 677. Sesame is known also to the Fulani (Barth, Reisen, II, 519 (Cass, II, 142). For the present-day cultivation of sesame in northern Nigeria, see Tardieu, "Les cultures d'appoint", 52.

35 Nachtigal, Sahara und Sudan, III, 261, 465.

36 El-Bekri, Description de l'Afrique, Arabic text, 170; transl., 320-1.

37 Jean-Léon l'Africain, Description de l'Afrique, 35-6.

38 Ibn Batoutah, Voyages, IV, 440-1, 444.

39 El-Cazwini, Kosmographie, 17. Cf. Dammann, Beiträge, 48. In the country of Bambuk on the upper Senegal, inhabited by the Mandingoes, the people knew cows' butter in the later eighteenth century, as reported by Golberry (Travels in Africa, I, 333); it was made before sunrise and used the same day to add to foods, particularly to rice. Butter is still among the foods eaten by the Senegal Wolof (see Gamble, The Wolof, 37). The Serer people of the area round the town of Thiès produce cows' butter, though they sell it outside the tribe: see Carine, "Usages alimentaires", 245. According to Labouret ("Les Manding", 40-1), the Mandingoes do not nowadays milk cows and thus cannot produce cows' butter. The question of the milking of cattle by the various peoples of the Mande group needs further research from a historical point of view. On the way from Jenne to Kabara, Caillié purchased fresh butter brought by the local Negro population and by the Fulani (see Caillié, Journal, II, 269, 271). Cows' butter is known nowadays to the Bozo people who live on the banks of the Bani, a tributary to the Niger (see Monteil, "La langue des Bozo", 331).

40 Jean-Léon l'Africain, Description de l'Afrique, 470. For

the use of butter in nineteenth-century Timbuctu, see Barth, Reisen, IV, 459 (Cass, III, 307). In the early nineteenth century, butter was eaten there not only by the Moors but also by the well-to-do part of the Negro population (Caillié, Journal, II, 319).

41 Ibn Batoutah, Voyages, IV, 432. Butter was certainly eaten, both fresh and, more particularly, melted; Ta'rīkh al-Fattāsh (Tarikh el-Fettach, Arabic text, 128; transl., 234) mentions the pouring of melted butter over food, practised in the town of Kabara near Timbuctu at the end of the sixteenth century. Nowadays, the peoples of the western Sudan make butter from curdled milk (Doutressoulle, L'élevage, 148).

42 Probably to some extent this was cows' butter, which is now made, and is very popular, among the Hausa especially, who prefer it to vegetable oil (see Mischlich, Kulturen im Mittel-Sudan, 25, 31). It is possible that this is a result of Fulani influence. This is how cows' butter was made by the Fulani, as described by Mungo Park, who observed it on the Gambia: "The cattle are milked in the mornings and evenings; the milk is excellent . . . The Foulahs use the milk chiefly as an article of diet, and that, not until it is quite sour. The cream which it affords is very thick, and is converted into butter by stirring it violently in a large calabash. This butter, when melted over a gentle fire, and freed from impurities, is preserved in small earthen pots, and forms a part in most of their dishes . . ." (Mungo Park, Travels, 62).

43 Nowadays, the pastoral Tuareg produce butter from the milk of goats, sheep and cows (Nicolaisen, Ecology and culture, 221, 224-6). For the making of butter by the Ahaggar Tuareg, see Gast, Alimentation, 146-8.

44 Edrîsî, Description de l'Afrique, Arabic text, 34; transl., 41. In this connection it may be added that the Ahaggar and Aïr Tuareg, who live in conditions similar to those of the Zaghāwa, never eat camels' butter which is hard to make and which they say has a poor flavour. See Nicolaisen, Ecology and culture, 63.

45 Al-ʿOmarī, Masālik, 69. Ta'rīkh al-Fattash (Tarikh el-Fettach, Arabic text, 181; French transl., 316-17) mentions the making of butter from goats' milk in Timbuctu at the end of the sixteenth century. This butter was made from milk from the previous evening's milking. Animal butter is also eaten in the Maouri country, on the borders of the Niger Republic and Nigeria. For the method of preparation of butter in this area, see Piault, La vie quotidienne de la femme Maouri, 36); but the author does not say what kind of milk the butter is made from.

46 Mauny, "Notes", 705. The eating of sheep's butter in the Sahara is also referred to by Leo Africanus (Description de l'Afrique, 560). It must be remembered that sheep's butter is still used in the oasis of el-Golea in the northern Sahara, where it is added to couscous (Doreau,

Considérations actuelles sur l'alimentation, 14).

47 In the southern Sahara, particularly in the oases, butter is made from goats' milk (Briggs, Tribes of the Sahara, 237). Goats' milk butter is also known to the Kel Ahaggar (Rognon, "Problèmes des Touaregs du Hoggar", 60). The Kel Ahaggar, also, use butter made from ewes' milk, sometimes mixed with goats' milk (Gast, Alimentation, 145-6).

48 El-Bekri, Description de l'Afrique, Arabic text, 170; transl., 320-1.

49 Game fat may also have been used sometimes. For example, Desplagnes (Le plateau central nigérien, 360) mentions that the peoples of the Niger Bend, in the Hombori and Bandiagara area, smoked the fat of the hippopotami and sea cows they killed, and used it for food. In the western Sahara, turtle fat was also eaten (see Fernandes, Description, 122-3). Daumas (Les chevaux du Sahara, 312) mentions the use of ostrich fat by Saharan horsemen.

50 Mungo Park, Travels, 62.

51 Rognon, "Problèmes des Touaregs du Hoggar", 60-1; Barth, Reisen, V, 703 (Cass, III, 759); for the making of cheese by the Kel Ahaggar, see Gast, Alimentation, 149-50.

52 In this connection, see Mauny, Tableau, 292.

53 El-Cazwini, Kosmographie, 17., cf. Dammann, Beiträge, 48. Golberry, who visited West Africa in the years 1785-7, mentions the large amount and importance of honey on the Senegal and Gambia and particularly in Bambuk. He also mentions bee-keeping in that country (Travels in Africa, I, 329). The French scholar and traveller Adanson, speaking of the remarkable number of bees in the neighbourhood of the town of Podor (in the former Takrūr), adds that the honey they produced was better than French honey (Voyage to Senegal, 150-1). It would seem that it is within the present-day Republic of Senegal that we should seek the people noted for producing great quantities of honey, recorded in the middle of the twelfth century by the Arab geographer az-Zuhrī (Kubbel, Matveev, Arabskiye istochniki, II, 217, 221). Ca da Mosto, in the fifteenth century, found honey used on the Senegal (Voyages, 51).

54 El-Bekri, Description de l'Afrique, Arabic text, 158; transl., 300.

55 Ibn Batoutah, Voyages, IV, 391. These were evidently baobab trees. Among the Bambara and Marka-Diala peoples of the Mamiandougou (between the Niger and the Bani), who live not far from the Walata-Mālī (Niani) area, bee-keeping is now practised. M. Claude Meillassoux writes in a letter dated 18 August 1966: "Beehives, either calabashes or in woven baskets, are hung in the trees close to the villages, as I was able to observe in 1962." M. Cissoko states that nowadays people in Mali commonly also take honey as a medicine.

56 Barth, Reisen, III, 215 (Cass, II, 408).

57 Baumann, Thurnwald, Westermann, Völkerkunde, 323.

58 Barth, Reisen, II, 105 (Cass, I, 485).

59 Ibn Batoutah, Voyages, IV, 386.

60 Jean-Léon l'Africain, Description de l'Afrique, 465. For the importation of honey from Jenne to Timbuctu at the beginning of the nineteenth century, see Caillié, Journal, II, 313.

61 Ibn Batoutah, Voyages, IV, 432-4. In the Gurma region of the Songhai country, a type of bee-keeping is practised in areas covered with trees and bushes, to which the people attach beehives. See Rouch, Les Songhay, 21. We have rather more information about bee-keeping by the people of the central Niger plateau, to the south of Gurma. The local Habbé-Gara who live among the rocks in this area kept bees in small stone hives. In the plains the Habbé-Gara constructed real hives, which they fumigated in the fire and put on large trees. Bee-keeping has been declining among the people of the southern part of the Habbé-Gara country; it is also disappearing among the Bambara, who prefer to obtain honey from wild bees living in tree holes and rock cavities (see Desplagnes, Le plateau central nigérien, 230).

62 Jean-Léon l'Africain, Description de l'Afrique, 472.

63 Gunn, Pagan peoples, 70.

64 Gunn, Conant, Peoples of the middle Niger, 35.

65 Jacut, Geogr. Wörterbuch, II, 932; cf. Dammann, Beiträge, 54-5.

66 Nachtigal, Sahara und Sudan, I, 601, 605, 666, and II, 533 (in Logone). (For the great number of bees and the quantity of honey in Bornu, see Denham, Clapperton, Oudney, Discoveries, Denham's journal, 320.)

67 For sugar cane and its occurrence in Africa, see Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 443-5 and passim; Cobley, Botany of trop. crops, 38-9; Dalziel, The useful plants, 541-2; Hailey, African survey, 862.

68 Mauny, "Notes", 694-5. On the introduction of sugar into West Africa by the Portuguese, (via Madeira), see Exell, "The introduction of food plants", 2. It is interesting to note, however, that already in the time of Ibn Fāṭima, who visited Mauritania in the twelfth century, it was the common opinion in the Arab world that the southern part of the country, particularly the country behind Jabal al-Lammāᶜ (the modern Cape Blanco?), presumably Mauritanian Adrar, was suitable for the cultivation of sugar. See Aboulféda, Géographie, transl., II, part I, 223-4.

69 Kubbel, Matveev, Arabskiye istochniki, II, 216, 221.

70 Aboulféda, Géographie, Arabic text, 157-9; transl., II, part I, 223-4.

71 Al-ᶜOmarī, Masālik, 43, footnote 6.

72 Barth, Reisen, IV, 173 (Cass, III, 127). For the cultivation of sugar cane in present-day Hausaland, see Smith, Baba of Karo, 16.

73 Nachtigal, Sahara und Sudan, I, 579. On the other hand, Rohlfs, who was in Bornu at nearly the same time, reports that the people there had no sugar (Quer durch Afrika, II, 11).

74 Barth, Reisen, III, 139 (Cass, II, 340).

75 El-Bekri, Description de l'Afrique, Arabic text, 162; transl., 306. See also Fagnan, Maghreb, 19 (Ibn Saᶜīd's text). Reference is made by Leo Africanus (Description de l'Afrique, 89, 93) to the growing of large quantities of sugar cane at Sūs, near the town of Tarudant; he adds, however, that the people did not know how to refine it.

76 El-Bekri, Description de l'Afrique, Arabic text, 17, 48; transl., 42, 102.

77 Jean-Léon l'Africain, Description de l'Afrique, 484.

78 Mauny, "Notes", 694, footnote 6. For this plant, also known as birgu (this form of the name, and the form burgu, are from the Bambara language), see Dalziel, The useful plants, 527.

79 Barth, Reisen, V, 166-7 (Cass, III, 999). According to Dalziel (The useful plants), the local Moslems drink the unfermented juice of this plant, but it quickly ferments and produces a cider-like beverage. The juice is also used to produce molasses.

80 For this plant, known also as Sorghum mellitum, see Dalziel, The useful plants, 547-8. It is cultivated in gardens mainly for the juice in its stalk, which is used, by the Hausa among others, to produce molasses and sweetmeats. See also Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 47 (Andropogon saccharatum).

81 Barth, Reisen, III, 138-9 (Cass, II, 340).

82 Nachtigal, Sahara und Sudan, I, 654, and II, 389, 583. In the Wolof language, Sorghum mellitum (Sorghum saccharatum) was known as diahnât. Probably this name is connected with the word guiarnatt which, according to Adanson (Voyage to Senegal, 69-70) was used for a kind of sorghum grown on the lower Senegal with stalks containing a sweet liquid from which he believed sugar could have been produced. Pales saw stems of Sorghum saccharatum sold on the markets of the Sudan. If this is treated like sugar cane in sugar production, a sweet syrup is produced; because of technical difficulties, the peoples of the Sudan do not use this for making sugar. The product is traded in the form of the syrup (see Les plantes alimentaires, 103; also note 80 above). It may be added that the stem of another kind of sorghum grown in the Lake Chad area also contains a large percentage of sugar.

83 Cobley, Botany of trop. crops, 16.

84 Jean-Léon l'Africain, Description de l'Afrique, 574.

85 Ibn Haukal, Liber imaginis terrae, I, 92. We have already mentioned Aulil, which should be located a little north from the estuary of the Senegal, possibly in the Gulf of Arguin, or more probably further south, near the present-day Nteret. See Marquart, Benin-Sammlung, CLXIX-CLXXI, CLXXIV-CLXXVI, CXCVII, CCXXIV; Mauny, Tableau, 324-6. Cf. Monteil, "L'Île d'Aoulil".

86 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 322-3.

87 Edrîsî, Description de l'Afrique, Arabic text, 2; transl., 2.

88 Aboulféda, Géographie, transl., II, part I, 212-13.

89 Ibid., 213, footnote 1. The salines in question were described in the middle of the eighteenth century by Adanson (Voyage to Senegal, 305-6). These are salt-water marshes containing at least 35% salt; on crystallization the salt is sharp and bitter in taste. In the region of these marshes was the village of Guioel which I think should be identified with the Gandiole of M. Reinaud. The salines at Nterert and other places in the neighbourhood (Twidermi, Moudjeran), are described by Mauny (Tableau, 325-6); he adds that rock-salt extracted from these salines was transported to Rosso on the lower Senegal; from there it went by boat upstream to Kayes, by the route described by al-Idrīsī. This must surely relate to the salines of Dahar. Odette de Puigaudeau writes as follows on the production and export of salt from the salines of southern Mauritania: "In 1934, I visited the sebkha or salines of Dahar lying in a dotted line between the dunes along the shore of the Trarza province north of Saint Louis. From these come the 4,000 to 5,000 tons of salt in bar and loose which are exported each year to Senegal and the Sudan by caravans of donkeys and oxen and camels and by sailing boats on the river [i.e. the Senegal]" (Le sel du désert, 25).

90 Sidibé, "Les Foula du Birgo", 465.

91 El-Bekri, Description de l'Afrique, Arabic text, 171; transl., 322. Tātentāl is also identified as Taghāza by Mauny (Tableau, 328). On the other hand, Dammann (Beiträge, 44) believes that two different rock-salt mines are referred to.

92 El-Cazwini, Kosmographie, 16. This author writes the geographical name incorrectly as تغارة (Taghāra) instead of the inferred form تغازة Taghāza. As can be seen, the error lies simply in the omission of the diacritical sign over the penultimate letter of the Arabic.

93 Ibn Batoutah, Voyages, IV, 377-8.

94 Jean-Léon l'Africain, Description de l'Afrique, 455.

According to Fernandes, the settlement, which Leo Africanus calls Taghaza Ackhalla (the latter part of the name being perhaps a corruption of the Arabic word kahlā' "black"), lay 15 days' journey from Walata, from Timbuctu, and from the town of Offaran (Ufaran in Wadi Nun on the southern border of Morocco). Shortly before 1506-7 it was evacuated, apparently for lack of drinking water (see Fernandes, Description, 88-9, 90-1 and 157, note 173). Caillié, during his journey from Timbuctu to Tafilelt, saw wells of salt water at a place which he called Trazas or Trarzas, to be identified, I think, with the old Taghāza. Caillié describes deserted houses there, built of slabs of salt, and records the history of the decline of this salt mine (Caillié, Journal, II, 417-18).

95 Aboulféda, Géographie, transl., II, part I, 217. In the Middle Ages there was yet another rock-salt mine in the western Sahara, called Ygild by Fernandes, to whom we owe an account of it (Description, 76-9); this should be identified with the present-day Sebkha Ijil, a saline situated at the foot of the mountain called Kediat Ijil in north-western Mauritania. Fernandes records that salt extracted from this saline was transported via Wadan, Tichit, Walata and Timbuctu to Jenne. For this saline (which was probably not known in al-Bakrī's time, but which seems to have been known in 1455 to Ca da Mosto) see Mauny, Tableau, 327. Mauny believes that Ca da Mosto has confused information about Ijil with information about Taghaza (which is the name used by Ca da Mosto). Crone (Ca da Mosto, Voyages, xiii, footnote) says Sebkha Ijil was formerly known as Taghaza el Gharbie, "Taghaza of the West". There is reference in Caillié (Journal, II, 380) to the salt trade with Ijil in the early nineteenth century; he writes of "salt of Wadan", from the place near the saline and on the route from Ijil to Timbuctu, and describes the salt found there in the form of slabs. Puigaudeau (Le sel du désert, 26) describes the present-day transport of grey salt from Sebkha Ijil to the western Sudan.

96 Al-ᶜOmarī, Masālik, 63. It appears from this that the kingdom of Mālī in the fourteenth century had a saline of its own, in all probability the salt-mine at Taghāza.

97 Al-ᶜOmarī, Masālik, 201-2.

98 Jacut, Geogr. Wörterbuch, I, 821. Yāqūt mentions salt brought by merchants from Sijilmāsa to Ghāna, not to Malī, which, at the beginning of the thirteenth century was not as yet of major political importance in the western Sudan.

99 Ibn Batoutah, Voyages, IV, 393-4.

100 El-Cazwini, Kosmographie, 11.

101 El-Bekri, Description de l'Afrique, Arabic text, 183; transl., 343. For the location of Tūtak, see Mauny, Tableau, 332.

102 Ibn Batoutah, Voyages, IV, 432.

103 Barth, Reisen, I, 571-3 (Cass, I, 391-3); Nachtigal, Sahara und Sudan, I, 535, 658. There is an interesting description of the salines at Bilma in Rohlfs, Quer durch Afrika, I, 249.

104 On ancient and present-day salines in the Sahara, see also Briggs, Tribes of the Sahara; for the import of salt into Hausaland, and on the reserves of salt possessed by that country, see Mischlich, Kulturen im Mittel-Sudan, 99-100. See also Maigret, Afrique occidentale française, 46.

105 Jacut, Geogr. Wörterbuch, IV, 329.

106 El-Bekri, Description de l'Afrique, Arabic text, 174; transl., 326-7.

107 Al-ᶜOmarī, Masālik, 83.

108 El-Bekri, Description de l'Afrique, Arabic text, 176; transl., 330-1.

109 Ibn Ḥauḳal, Liber imaginis terrae, I, 101.

110 El-Cazwini, Kosmographie, 16.

111 Ibn Batoutah, Voyages, IV, 378.

112 Ibid.

113 Jean-Léon l'Africain, Description de l'Afrique, 468.

114 Ibid., 471. According to Fernandes (Description, 82-5), the salt load of one camel from Ygild (Sebkha Ijil) cost 7 mithqals at Tichit; at Timbuctu the price of such a load, together with the camel (which had to be slaughtered) was as much as 100-25 mithqals.

115 There are frequent references to the lack of salt in West Africa in the accounts given by European travellers of the eighteenth and nineteenth centuries. For example, Mungo Park (Travels, 279) states that in the Mandingo country, salt was an article of the utmost luxury. Caillié, describing the country of Bure, the former "land of gold dust" and its neighbourhood — also areas inhabited by Mandingoes — states that salt there was a luxury indulged in only on festive occasions (Journal I, 369-70 and 443). In Bornu, according to an early nineteenth-century account, the use of salt was hardly known (see Denham, Clapperton, Oudney, Discoveries, Denham's journal 317). Even at the present day, rock salt is used very sparingly in the fare of many West African peoples. Thus, for example, the Yoruba of southern Nigeria add salt to yam porridge only when the yam is of poor quality (see Bascom, "Yoruba Cooking", 128), and the Fulani, though they flavour their millet porridge with strongly-flavoured sauces, do not add salt, which continues to be a luxury (see Dupire, Peuls nomades, 60, 62).

116 Mauny, "Notes", 716-17; Tableau, 248-9.

117 Jean-Léon l'Africain, Description de l'Afrique, 38.

118 Barth, Reisen, IV, 72 (Cass, III, 68).

119 Ibn Batoutah, Voyages, IV, 393-4. See also Dozy, Suppl.,

II, 137, under ʿitrīyāt.

120 Ibn Batoutah, Voyages, IV, 432.

121 Barth, Reisen, V, 31 (Cass, III, 365). Among the spices used by the people of the southern Sahara, mention should also be made of shīḥ (see Edrîsî, Description de l'Afrique, Arabic text, 31; transl., 38). Al-Idrīsī's editor translates shīḥ as "wormwood"; but there are also other meanings of the word. I have discussed this plant above, in connection with meat dishes. For the various spices used by the Maouri in the Republic of Niger, see Piault, La vie quotidienne de la femme Maouri, 33-4.

122 Mauny, "Notes", 705-6.

123 For kola, its varieties, origin and use, see Bois, Plantes, II, 58; Dalziel, The useful plants, 100-4; Hailey, African survey, 842.

124 Renaud. Colin, Tuḥfat al-aḥbāb, 182.

125 Jean-Léon l'Africain, Description de l'Afrique, 54. According to Ta rīkh al-Fattāsh, a history of the western Sudan which was mainly compiled in the sixteenth century, but which includes some material from the seventeenth century (up to A.D. 1665), plantations of kola (in Arabic kūru, read guro) existed in the historic kingdom of Malli (Mālī): see Tarikh el-Fettach, Arabic text 38-9, French translation, 67. The current names for kola (both tree and nut) in the Bambara and Mandingo languages are oro, uro, woro, goro, gure, kuruo; in Fulani, the fruit is called goro, the tree gorohi. The Hausa and the Kanuri also use the name goro: see Dalziel, The useful plants, 100-1. According to Mauny (Tableau, 249), the reference in al-Maqqarī (seventeenth century) to nuts exported from Walata to Tlemcen during the twelfth to fourteenth centuries may refer to kola.

126 Gamble, The Wolof, 39.

127 Sidibé, "Les Foula du Birgo", 464, 468, 474 (in the neighbourhood of Kita).

128 Nachtigal, Sahara und Sudan, I, 576, 623, 666-7. Among the extensive literature on the kola nut, its origins, use varieties, trade, etc., I should like to draw attention to the information given by Rohlfs (Quer durch Afrika, II, 266-8) and by Imam Umaru (Mischlich, Kulturen im Mittel-Sudan, 95-9). The middle Niger countries, including Timbuctu, were importing kola in the early nineteenth century by a route through Timé (in Guinée) and Jenne; see Caillié, Journal, II, 16-18. Kola was probably also imported from the Guinea coast to Mālī and other countries of the western Sudan by another route which was in existence from the fifteenth century between Elmina (on the coast of present-day Ghana) and Jenne (see note 10 to Ch. 1 above).

129 Ibn Batoutah, Voyages, IV, 434. In addition, the water in the Sahara wells on the route between Sijilmasa, Ghāna and

the "land of gold dust" was bad, according to Yāqūt. This is what he writes: "Merchants travel from Sijilmāsa to a town in the Sudan country called Ghāna. . . They carry carry water from the Lamtūna lands [this refers to Mauritanian Adrar]. . . in large and small containers [made of leather]. They travel and drink water which is bad and injurious to health, devoid of any of the properties of water except that of being liquid. [So] they carry this water from the Lamtūna country, drink it and make their camels drink it also. Immediately after drinking this water their health is impaired and they suffer from a peculiar disease. . . so that it is with great difficulty that they reach Ghāna. There they stay and recover . . ." (Jacut, Geogr. Wörterbuch, I, 821; cf. Dammann, Beiträge, 41-2). Apparently the water from the wells in the Lamtūna country contained some mineral salts in solution which disagreed with the travellers, possibly alum.

130 Ibn Batoutah, Voyages, IV, 391. There is also a reference in al-Qazwīnī, based on information from faqīh Abu' r Rabī' al-Multanī (al-Milyānī), to seeing on the way from Sijilmāsa to Ghāna a number of hollowed-out trees where rainwater was stored as in cisterns; the water was kept there till summer and was used to quench the thirst of travellers (see El-Cazwini, Kosmographie, 37; Dammann, Beiträge, 39). This is obviously a reference to hollow (rotten) trunks of the baobab, well-known for its exceptional girth. Nachtigal saw such trees in the eastern Sudan, between el-Fasher and el-Obeid; they were used there as water cisterns, each capable of holding up to 400 quintals of water (Nachtigal, Sahara und Sudan, III, 500). Baobab trees are still used to this day as water storage cisterns in this area. For the use of the trunks of baobab trees, naturally or artificially hollowed, as water reservoirs, see also Dalziel, The useful plants, 115.

131 Al-'Omarī, Masālik, 60.

132 Ibn Batoutah, Voyages, IV, 438.

133 Ibid. IV, 383.

134 Jacut, Geogr. Wörterbuch, I, 821; Dammann, Beiträge, 42. On the subject of drinking water from a camel's stomach, see also Fernandes (Description, 74-5). In this connection we may also mention one of the misadventures which befel al-Aissaoui, a leader of desert robbers from north Mauritania, and his companions; in the biography of this plunderer, given by Puigaudeau (Le sel du désert, 213), we read that they were obliged to drink "the stinking liquid from the stomachs of two camels". Alioun Sal reports a similar practice in 1865 (Ancelle, Explorations, 211); according to him, the tongues of the water camels were slit to prevent rumination.

135 Incidentally, milk is in some cases subject to taboo in West Africa (see Thomas, "La conduit négro-africaine du repas", 619).

136 See Gamble, The Wolof, 34; Mischlich, Kulturen im

Mittel-Sudan, 29-33; Nachtigal, Sahara und Sudan, I, 665-6; Briggs, Tribes of the Sahara. The Tuareg have an extensive nomenclature for various milk products; thus, for example, the Auelimmiden Tuareg have different names for fresh milk, for cream, and for sour milk, distinguishing between "sour milk" and "very sour milk" (see Barth, Reisen, V, 703; Cass, III, 579). According to Nicolaisen (Ecology and culture, 221), the milk of goats, sheep, cows and camels is used as food by the Tuareg. Milk is often drunk without any preparation, especially in the case of camels' milk. The Berber Zenaga of southern Mauritania also make a distinction between fresh milk, sour milk and sour cream. See Broussais, "Recherches", 386. For the various ways of using milk among the Ahaggar Tuareg, see Gast, Alimentation, 139-40.

137 Al-ᶜOmarī, Masālik, 94.

138 Ibn Batoutah, Voyages, IV, 442-3.

139 Jean-Léon l'Africain, Description de l'Afrique, 465. Leo Africanus reports that milk was very cheap at Jenne. According to written information from M. Claude Meillassoux, the Sonîke (Soninke) of Goumbou nowadays drink milk from their cows milked by Fulani herdsmen. The Serer in the neighbourhood of Thiès in Senegal milk cows and drink the milk, but fresh milk is drunk only by herdsmen. The milk from three days milking is stored in calabashes for souring; it is then either sold in the market, or mixed with water and drunk (see Garine, "Usages alimentaires", 245).

140 El-Bekri, Description de l'Afrique, Arabic text, 170; transl., 320-1.

141 Ibn Batoutah, Voyages, IV, 443.

142 Ibid., IV, 437. According to the author of Taᵓrīkh al-Fattāsh, there were milch cows in Gao in the middle of the sixteenth century (Tarikh el-Fettach, Arabic text, 108; French translation, 199). For the drinking of fresh milk by the Tuareg nomadizing to the south of the Niger, see Barth, Reisen, IV, 349 (Cass, III, 237).

143 Edrîsî, Description de l'Afrique, Arabic text, 6; transl., 6-7. It seems that the people of Mālī formerly drank cows' milk, which is not now used by the Mandingoes. Certainly in the country of Bambuk, adjacent to the historic state of Mālī, and inhabited by a people closely related to the people of Mālī, large herds of cattle were kept in the eighteenth century, and probably earlier, which were milked twice a day; sour cream from this milk was added to millet porridge (see Golberry, Travels in Africa, I, 333). On the other hand, Caillié, writing a few decades later, states that the Bambara, akin to the people of Mālī, did not milk cows (Journal, II, 65). There is reference in the Sudan chronicle Taᵓrīkh as-Sūdān (As-Saᶜdi, Tarikh es-Soudan 471) to the use of cows' milk in Dendi on the Niger south of the Songhai state in the late sixteenth century. Cows' milk is still drunk by the Songhai (see Rouch, Les Songhay,

21). Goats' milk is readily consumed by the Serer people of Senegal (see Garine, "Usages alimentaires", 224).

144 Jean-Léon l'Africain, Description de l'Afrique, 421. Taʾrīkh al-Fattāsh refers to the drinking of goats' milk in Timbuctu at the end of the sixteenth century (Arabic text, 181; transl., 316-17). According to M. Cissoko, the present-day people of Mali think that goats' milk has medicinal properties. Goats' milk is drunk by the people of the oases in the southern and central Sahara and also by the Tuareg and by the Tebu of Tibesti (see Briggs, Tribes of the Sahara, 237, 238, 242). The Fulani make their children drink goats' milk (see Dupire, Peuls nomades, 60). We have unfortunately no information in Arabic sources on the drinking of sheep's milk by the peoples of West Africa in the period corresponding to the European Middle Ages, though it seems certain that it was drunk by the people of Mālī who, if we are to believe al-ʿOmarī (Masālik, 69), made butter from sheep's milk. I do not know the present situation in this respect, though it is known that some of the Negro peoples of West Africa, for example the Hausa, do not drink sheep's milk (see Mischlich, Kulturen im Mittel-Sudan, 33). On the other hand, sheep's milk is drunk by the Tuareg and the peoples of the Saharan oases (Briggs, Tribes of the Sahara, 238, 243-4).

145 Jean-Léon l'Africain, Description de l'Afrique, 36.

146 Briggs, Tribes of the Sahara, 19.

147 Barth, Reisen, III, 69 (Cass, II, 283).

148 Dupire, Peuls nomades, 60.

149 Ibn Batoutah, Voyages, IV, 394. Along with meat, sour milk was the principal foodstuff of the Berber Lamtūna who lived in southern Mauritania in the Middle Ages (see el-Bekri, Description de l'Afrique, Arabic text, 164, 170; transl., 310, 321). Ibn Ḥauqal reports that sour milk was the chief foodstuff, after meat, of the nomadic Berber Massūfa in the western Sahara (see Ibn Ḥauḳal, Liber imaginis terrae, 101; cf. ibid., 84). See also El-Cazwini, Kosmographie, 38; also al-Waṭwāṭ (c. 1318) in Fagnan, Maghreb, 55.

150 El-Bekri, Description de l'Afrique, Arabic text, 173; transl., 339. The Negro people of the Senegal towns of Sillā and Takrur drank sour milk in the twelfth century (Edrîsî, Description de l'Afrique, Arabic text, 3; transl., 3). Sour milk is still drunk by the Wolof of Senegambia (see Gamble, The Wolof, 37).

151 Ibn Batoutah, Voyages, IV, 400-1. According to M. Cissiko, sour milk is widely used in Mali at the present day. Sour milk is known also to the Bozo, who live on the Bani river (see Monteil, "La langue des Bozo", 331).

152 Ibn Batoutah, Voyages, IV, 435.

153 El-Bekri, Description de l'Afrique, Arabic text, 181; transl., 326; Ed-Dimichqui, Cosmographie, 239; Manuel de

cosmographie, 339. In the area between Takadda in Aïr and the Tuat oases, sour milk was among the chief foodstuffs of the local Tuareg population (see Ibn Batoutah, Voyages, IV, 440). There is repeated reference in al-Idrīsī to the drinking of sour milk by peoples of the Zaghāwa group, which included (according to the medieval Arabic sources) the Teda-Daza tribes (see Edrîsî, Description de l'Afrique, Arabic text, 12, 34, 37; transl., 15, 40-1, 43-4). The Teda of Tibesti still add sour milk to their porridge (Briggs, Tribes of the Sahara, 241). The Tuareg of Ahaggar also add sour milk to their groats (assink) (ibid., 243). The other group of southern Tuareg, the Aïr Tuareg, also use sour milk which is kept in skin bags and calabashes. After 24 hours the milk becomes sour, and is then stored in a very cool place to prevent the formation of junket which is not eaten by the Tuareg (see Nicolaisen, Ecology and culture, 221). The Fulani nomadizing between Zinder and Aïr drink sour milk as well as fresh (see Dupire, Peuls nomades, 62).

154 Ibn Batoutah, Voyages, IV, 434. According to M. Cissoko, this beverage is still very willingly drunk in Mali.

155 Barth, Reisen, V, 703 (Cass, III, 759). At the beginning of the nineteenth century, this drink was used by the people of Mauritania, as we learn from Caillié (Journal, II, 24); he records it for both the southern and the northern parts of the country. It is known nowadays in various places, including southern Mauritania (see Toupet, Tamourt en Naaj, 98). Nicolaisen (Ecology and culture, 221) mentions the consumption of a similar drink mixed with water, among the Tuareg. A similar mixture of milk and water is also drunk by the present-day peoples of Mauritania (see Nicolas, La langue berbère). The Ahaggar and Tassili-n-Ajjer Tuareg also drink a mixture of water and buttermilk; this drink is highly esteemed among them (see Nicolaisen, Ecology and culture, 221). In Bornu, the poorer section of the population in the nineteenth century drank kiam, skimmed cows' milk mixed with water and soured (see Nachtigal, Sahara und Sudan, I, 665). There is reference in Fernandes (Description, 74-5) to camels' milk (sour, or perhaps fresh) mixed with water. The Tuareg of Ahaggar drink milk diluted with water and fresh, sour or curdled milk mixed with a quantity of water equal to, or more than a quarter of its volume. On this subject, see Gast, Alimentation, 139-40.

156 Baumann, Thurnwald, Westermann, Völkerkunde, 323. Milk sweetened with honey, which was drunk in Timbuctu in the middle of the nineteenth century, is described by Barth (Reisen, IV, 403; Cass, III, 474).

157 Ibn Batoutah, Voyages, IV, 434.

158 Barth, Reisen, II, 491-2 (Cass, II, 122). Honeyed water was drunk at Jenne in the early nineteenth century. Tuareg visiting this town were very fond of this, which they called "Jenne water" (see Caillié, Journal, II, 283-4). A similar drink was obtained by mixing byrgu juice with water; Barth drank this on the way from Timbuctu to Gao

(Reisen, V, 167, Cass, III, 449).

159 Several questions concerning these cereal drinks have been discussed above, in the chapter dealing with cereal dishes. The nearest English equivalent is barley-water.

160 Ibn Batoutah, Voyages, IV, 437.

161 Nachtigal, Sahara und Sudan, I, 665. The peoples of the Lobi group also readily consume a drink made of millet flour dissolved in water; see Labouret, Les tribus du rameau Lobi, 113.

162 Nachtigal, Sahara und Sudan, II, 163. This drink seems to be the same as the "millet-water" drunk at Agades (Barth, Reisen, I, 434-5; Cass, I, 331, "fura") or perhaps with the drink made from the seed of a kind of grass, also made at Agades (ibid., I, 427; Cass, I, 313). "Millet water" was also drunk in Asben (ibid., II, 17; Cass, I, 434) and in Hausaland (ibid., II, 177, and IV, 184; Cass, I, 532 and III, 135).

163 Ibn Batoutah, Voyages, IV, 434. According to Mauny (Tableau, 448), daqnū (daqnō) is millet-meal dissolved in water. The present-day form of this word, which is derived from the Songhai language, is dõnu (attested with the Habbé-Gara). According to Desplagnes (Le plateau central nigérien, 230), dhône in the language of the people of the Hombori and Bandiagara area, is a drink made of millet-balls dissolved in milk or water. In the dialect of the Auelimmiden Tuareg, daqnō is called tadeknōt (Barth, Reisen, V, 702; Cass, III, 758).

164 Barth, Reisen, V, 79 (Cass, III, 392). Caillié, Journal, II, 227, 236, 368, 381, 383), thinks that dokhnou (this is how the French traveller spells the name) is a mixture of flour and honey, dissolved in water and drunk. He himself drank the beverage directly after it had been prepared at the town of Jenne, at the house of one of the local rich Moslems, and also at the place of a Moorish merchant on the way from Jenne to Timbuctu. Before starting on his journey from Arawan to Tafilelt, he was offered the gift of a bag of dokhnou. According to another passage, dokhnou with honey was added to brackish water to improve the taste (Caillié, Journal, II, 404). His account refers distinctly to millet balls which were used for various purposes, including food for travellers. Odette du Puigaudeau (Le sel du desert, 72) writes of another kind of dokhnu when describing the supplies of a caravan which travelled from Timbuctu to Morocco in 1934; according to her, dokhnu is a mixture of barley flour, millet flour, and of the flour prepared from the fruits of the baobab flavoured with red pepper and powdered cheese. To make a drink, this mixture is dissolved in water. We may recall also the drink called dõn, prepared for Faraŋ, the legendary king of Gao; this drink was honeyed (see Desplagnes, Le plateau central nigérien, 414).

165 Jacut, Geogr. Wörterbuch, II, 932; Dammann, Beiträge, 54-5.

166 Golberry, Travels in Africa, I, 339.

167 Ibn Batoutah, Voyages, IV, 386.

168 Jean-Léon l'Africain, Description de l'Afrique, 452, footnote 166.

169 Nachtigal, Sahara und Sudan, I, 601 (see also ibid., 666).

170 Edrîsî, Description de l'Afrique, Arabic text, 5; transl., 6.

171 Gamble, The Wolof, 36. Information on the preparation of beer in the western Sudan (where it is known as dolo, sam, pouh or chapalo) is contained in Les plantes alimentaires, (77), based on materials collected by Pales and Mme Faucher.

172 Barth, Reisen, II, 468, 493 (Cass, II, 108; the reference to beer in the second passage is omitted in the English version); Nachtigal, Sahara und Sudan, II, 179 (Baele), 683 (Bagirmi) and III, 212 (Zaghawa of Wadai); Sidibé, "Les Foula du Birgo", 482, 490, 498. Barth also mentions three kinds of beer brewed in Wadai: bilbil ("red beer"), ákebēsh ("white beer"), and a third kind known as hal (Reisen, III, 525; Cass, II, 662). There is reference in Mungo Park to the making of beer in the Mandingo and Bambara countries at the end of the eighteenth century (Travels, 42, 190, 279). For merîsé, see also Dozy, Suppl., II, 581. In the Arabic dialect spoken east of Lake Chad and in Wadai, there are names for various kinds of millet beer: the common kind known as pipi, dolo, merise, and the opaque kind containing a millet pap, which is called am belbel (or, more correctly, umm balbal); see Carbou, Méthode, 201; Dalziel, The useful plants, 545. In Africa, beer is made as follows: millet grain (sorghum) is soaked in water and dug into the ground for a short time to make it sprout. The grain is then pounded to a thick meal and cooked in an earthern pot; on filtering, a light sweet liquid is obtained which is then slowly fermented in calabashes. After one or two days a mildly intoxicating drink is ready. See Reinhardt, Kulturgeschichte der Nutzpflanzen, I, 146. There is an interesting description of the brewing of beer from millet by the people of the Lobi group in Labouret's Les tribus du rameau Lobi, 112.

173 El-Bekri, Description de l'Afrique, Arabic text, 176; transl., 330.

174 Ibid., Arabic text, 172-3; transl., 324-5. Al-Bakrī (ibid., Arabic text, 176; transl., 330) mentions "producers of intoxicating drinks" in the historic land of Ghāna, who were in the king's service, and who upon the king's death were buried with him. That such specialist producers of beer actually existed, is seen also from the account by Caillié (Journal, II, 150); he encountered them among the Bambara near the town of Jenne. According to Caillié, brewers of beer visited the various places in that country on festive occasions, and retailed beer in small calabashes.

175 Unless, indeed, this refers to palm wine.

176 Gamble, The Wolof, 38.

177 Mead was drunk by the Mandingoes and the Bambara at the end of the eighteenth century (see Mungo Park, Travels, 42, 190, 193). Caillié (Journal, passim) records that mead was produced from honey and millet which had already been fermented. Mead is still used in the western Sudan up to the present, for example in the Kita area (Sidibé, "Les Foula du Birgo", 490); by the Bozo (Monteil, La langue des Bozo, 331); and in the Hombori and Bandiagara area in the Niger Bend (Desplagnes, Le plateau central nigérien, 230) — in this area, mead is kept as a drink for chiefs only. According to M. Cissoko, mead is used in the present state of Mali, especially among the Bambara.

178 El-Bekri, Description de l'Afrique, Arabic text, 162; transl., 307.

179 Gamble, The Wolof, 38. Vendeix, "Monographie du pays Senoufo", 651. Palm wine was also used in the Hombori and Bandiagara area, where, however, it was rather rare (see Desplagnes, Le plateau central nigérien). In this area (probably as in other countries on the Niger) a sweet alcoholic drink was made of burgu (byrgu); see Desplagnes, ibid. For alcoholic drinks in former French West Africa, see Bismuth, Mesnage, "Les boissons alcooliques", 60-118.

180 Palm wine is produced also from the sap of Borassus flabellifer (French rônier). According to M. Cissoko, it is in use in Mali in the area north of Bamako. It is also known in Senegal. I have seen several specimens of this tree in the southernmost parts of Mauritania, to the north of Rosso.

5: UTENSILS

1 Al-ᶜOmarī, Masālik, 62-3.

2 Jean-Léon l'Africain, Description de l'Afrique, 481.

3 Ibn Batoutah, Voyages, IV, 393.

4 Ibid., IV, 386.

5 Ibid., IV, 401.

6 Jean-Léon l'Africain, Description de l'Afrique, 35-6. But it is possible that these drinking vessels were made of wood, like those still used by the Kel Ahaggar; for these, see Gast, Alimentation, 360-2.

7 Al-ᶜOmarī, Masālik, 63.

8 Ibn Batoutah, Voyages, IV, 398.

9 Al-ᶜOmarī, Masālik, 63.

10 Ibn Batoutah, Voyages, IV, 398.

11 For traditional West African kitchen utensils for cooking, eating and storing food, the reader is referred especially to the study by Piault, La vie quotidienne de la femme Maouri, 36-9; and to Gast, Alimentation, 323-99.

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BIFAN — Bulletin de l'IFAN

EI — Encyclopaedia of Islam, English ed. 4 vols., Leyden and London, 1913-34. Suppl., 1938

GAL — Geschichte der arabischen Literatur

IAI — International African Institute

IFAN — Institut Français (later, Fondamental) d'Afrique Noire

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